



# INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

*We make Indiana a cleaner, healthier place to live.*

Joseph E. Kernan  
Governor

Lori F. Kaplan  
Commissioner

March 2, 2004

100 North Senate Avenue  
P.O. Box 6015  
Indianapolis, Indiana 46206-6015  
(317) 232-8603  
(800) 451-6027  
[www.in.gov/idem](http://www.in.gov/idem)

TO: Interested Parties / Applicant

RE: Mirant Sugar Creek, LLC / SSM 167-18343-00123

FROM: Paul Dubenetzky  
Chief, Permits Branch  
Office of Air Quality

## Notice of Decision: Approval - Effective Immediately

Please be advised that on behalf of the Commissioner of the Department of Environmental Management, I have issued a decision regarding the enclosed matter. Pursuant to IC 13-15-5-3, this permit is effective immediately, unless a petition for stay of effectiveness is filed and granted according to IC 13-15-6-3, and may be revoked or modified in accordance with the provisions of IC 13-15-7-1.

If you wish to challenge this decision, IC 4-21.5-3 and IC 13-15-6-1 require that you file a petition for administrative review. This petition may include a request for stay of effectiveness and must be submitted to the Office of Environmental Adjudication, 100 North Senate Avenue, Government Center North, Room 1049, Indianapolis, IN 46204, **within eighteen (18) calendar days of the mailing of this notice**. The filing of a petition for administrative review is complete on the earliest of the following dates that apply to the filing:

- (1) the date the document is delivered to the Office of Environmental Adjudication (OEA);
- (2) the date of the postmark on the envelope containing the document, if the document is mailed to OEA by U.S. mail; or
- (3) The date on which the document is deposited with a private carrier, as shown by receipt issued by the carrier, if the document is sent to the OEA by private carrier.

The petition must include facts demonstrating that you are either the applicant, a person aggrieved or adversely affected by the decision or otherwise entitled to review by law. Please identify the permit, decision, or other order for which you seek review by permit number, name of the applicant, location, date of this notice and all of the following:

- (1) the name and address of the person making the request;
- (2) the interest of the person making the request;
- (3) identification of any persons represented by the person making the request;
- (4) the reasons, with particularity, for the request;
- (5) the issues, with particularity, proposed for considerations at any hearing; and
- (6) identification of the terms and conditions which, in the judgment of the person making the request, would be appropriate in the case in question to satisfy the requirements of the law governing documents of the type issued by the Commissioner.

If you have technical questions regarding the enclosed documents, please contact the Office of Air Quality, Permits Branch at (317) 233-0178. Callers from within Indiana may call toll-free at 1-800-451-6027, ext. 3-0178.

Enclosures  
FNPER.dot 9/16/03



# INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

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Mr. Christopher G. Norris  
Mirant Sugar Creek, LLC  
5900 Darwin Road  
West Terre Haute, IN 47885

Re: PSD Modification 167-18343-00123  
Third Significant Modification to Permit  
PSD-167-12208-00123

Dear Mr. Norris:

Mirant Sugar Creek, LLC submitted an application requesting a modification to revise the carbon monoxide emissions limitations turbines during start up and shutdown periods for the combined cycle combustion. Pursuant to the provisions of 326 IAC 2-2 and IC 13-15-7-1 a significant modification to this permit is hereby approved as described in the attached Technical Support Document (TSD).

The following construction conditions are applicable to this permit modification:

1. The data and information supplied with the application shall be considered part of this modification approval. Prior to any proposed change, which may affect the potential to emit (PTE) of the proposed project, the Office of Air Quality (OAQ) must approve the change.
2. This approval does not relieve the Permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.
3. Pursuant to IC 13-15-5-3, this permit modification becomes effective upon its issuance. Pursuant to 326 IAC 2-2 (Prevention of Significant Deterioration), 326 IAC 2-1.1-6 (Public Notice), IC 4-21.5-3-7 (Review; Petition; Denial of Petition; Preliminary Hearing) and IC 13-15-6 (Appeal of Agency Determination to Issue or Deny Permit) this approval can be appealed as specified in these provisions.
4. All requirements and conditions of this approval shall remain in effect unless modified in a manner consistent with procedures established pursuant to 326 IAC 2.

Other than the changes detailed in the TSD for this approval, all other conditions of the permit shall remain unchanged and in effect. Please find enclosed the entire modified permit document.

This decision is subject to the Indiana Administrative Orders and Procedures Act - IC 4-21.5-3-5. If you have any questions on this matter, please contact Ms. Iryn Calilung, OAQ, 100 North Senate Avenue, P.O. Box 6015, Indianapolis, Indiana, 46206-6015, or call (800) 451-6027, and ask for extension 3-5692, or dial (317) 233-5692.

Sincerely,

Original signed by Paul Dubenetzky  
Paul Dubenetzky, Chief  
Permits Branch  
Office of Air Quality

cc: File - Vigo County  
Vigo County Health Department  
Vigo County Air Pollution Control  
Air Compliance Section Inspector— Jim Thorpe  
Technical Support and Modeling - Michele Boner  
Barnes & Thornburg - Anthony Sullivan



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## NEW SOURCE CONSTRUCTION PERMIT Prevention of Significant Deterioration (PSD) Permit Office of Air Quality and Vigo County Air Pollution Control

Mirant Sugar Creek LLC  
5900 Darwin Road  
West Terre Haute, IN 47885

(herein known as the Permittee) is hereby authorized to construct and operate subject to the conditions contained herein, the emission units described in Section A (Source Summary) of this permit.

This permit is issued to the above mentioned company under the provisions of 326 IAC 2-1.1, 326 IAC 2-5.1, 326 IAC 2-6.1 and 40 CFR 52.780, with conditions listed on the attached pages.

This permit is also issued under the provisions of 326 IAC 2-2, 40 CFR 52.21, and 40 CFR 52.124 (Prevention of Significant Deterioration), with conditions listed on the attached pages.

Construction Permit No.: CP 167-12208-00123	
Original Signed by: Paul Dubenetzky, Branch Chief Office of Air Quality	Issuance Date: May 09, 2001

First Significant Modification No.: 167-15295- 00123, issued July 24, 2002  
First Notice Only Change No.: 167-15906- 00123, issued August 06, 2002  
Second Significant Modification No.: 167-17117- 00123, issued on April 23, 2003

Third Significant Modification No.: 167-18343-00123      Items Affected: D.2.5 and Quarterly Report Form

Mirant Sugar Creek, LLC  
West Terre Haute, Indiana  
Permit Reviewer: David Howard

Third Significant Modification No: 167-18343-00123  
Permit Writer: Iryn Calilung

Page 2 of 43  
CP-167-12208  
ID-167-00123

Issued by: Original signed by Paul Dubenetzky

Paul Dubenetzky, Branch Chief  
Office of Air Quality

Issuance Date: March 2, 2004

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## SECTION A

## SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ), and Vigo County Air Pollution Control (VCAPC). The information describing the source contained in conditions A.1 through A.3 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

### A.1 General Information [326 IAC 2-5.1-3(c)] [326 IAC 2-6.1-4(a)]

---

The Permittee owns and operates a natural gas merchant power plant.

Authorized Individual:	Plant Manager
Source Address:	5900 Darwin Road, West Terre Haute, IN 47885
Mailing Address:	5900 Darwin Road, West Terre Haute, IN 47885
Phone Number:	(812) 538-2100
SIC Code:	4911
County Location:	Vigo
County Status:	Maintenance Attainment SO <sub>2</sub> ; Attainment for NO <sub>x</sub> , CO, PM <sub>10</sub> , Lead
Source Status:	Major, under PSD rules

### A.2 Emissions units and Pollution Control Equipment Summary

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This stationary source is approved to construct and operate the following emissions units and pollution control devices:

- (a) Four (4) natural gas-fired combustion turbine generators, designated as units CT11, CT12, CT21, CT22, with a maximum heat input capacity of 1,490.5 MMBtu/hr (per unit on a lower heat heating value), and exhausts to stacks designated as E11B, E12B, E21B and E22B, respectively, for use when operating in simple cycle. During combined cycle operation exhaust goes to stacks designated E11A, E12A, E21A and E22A, respectively.
- (b) Four (4) duct burners, designated as units DB11, DB12, DB21, DB22, with a maximum heat input capacity of 300 MMBtu/hr (per unit on a higher heating value basis) each and exhausts to stacks designated E11A, E12A, E21A, E22A, respectively.
- (c) Four (4) heat recovery steam generators, designated as units HRSG11, HRSG12, HRSG21, HRSG22.
- (d) Four (4) selective catalytic reduction systems, designated as units SCR11, SCR12, SCR21, SCR22.
- (e) Five (5) natural gas conditioning heaters, designated NGCH1, NGCH2, NGCH3, NGCH4, NGCH5 with a maximum heat input capacity of 5 MMBtu/hr (per unit on a higher heating value basis), and exhausts to stacks E7, E8, E9, E10, E11 respectively.
- (f) Two (2) steam turbines, designated as units ST1 and ST2.
- (g) Two (2) cooling towers, designated as units COOL1 and COOL2, exhausts to stacks designated E3 and E4, respectively.
- (h) Two (2) diesel fire pumps, each with a rating of 267 horsepower (hp).



- (i) Two (2) diesel emergency generators, each with a rating of 1,475 horsepower (hp).

A.3 Part 70 Permit Applicability [326 IAC 2-7-2]

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This stationary source is required to have a Part 70 permit by 326 IAC 2-7-2 (Applicability) because:

- (a) It is a major source, as defined in 326 IAC 2-7-1(22);
- (b) It is an affected source under Title IV (Acid Deposition Control) of the Clean Air Act, as defined in 326 IAC 2-7-1(3);
- (c) It is a source in a source category designated by the United States Environmental Protection Agency (U.S. EPA) under 40 CFR 70.3 (Part 70 - Applicability).

A.4 Acid Rain Permit Applicability [326 IAC 2-7-2]

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This stationary source shall be required to have a Phase II, Acid Rain permit by 40 CFR 72.30 (Applicability) because:

- (a) The combustion turbines are new units under 40 CFR 72.6.
- (b) The source cannot operate the combustion units until their Phase II, Acid Rain permit has been issued.

THIS SECTION OF THE PERMIT IS BEING ISSUED UNDER THE PROVISIONS OF 326 IAC 2-1.1 AND 40 CFR 52.780, WITH CONDITIONS LISTED BELOW.

## B.1 Permit No Defense [IC 13]

This permit to construct does not relieve the Permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.

## B.2 Definitions

Terms in this permit shall have the definition assigned to such terms in the referenced regulation. In the absence of definitions in the referenced regulation, any applicable definitions found in IC 13-11, 326 IAC 1-2, and 326 IAC 2-1.1-1 shall prevail.

**B.3 Effective Date of the Permit [40 CFR 124]**

Pursuant to 40 CFR 124.15, 40 CFR 124.19, and 40 CFR 124.20, this permit is effective immediately after the service of notice of the decision, except as provided in 40 CFR 124. Three (3) days shall be added if service of notice is by mail.

#### B.4 Revocation of Permits [326 IAC 2-2-8]

Pursuant to 326 IAC 2-2-8(a)(1) and 40 CFR 52.21, this permit to construct shall expire if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is discontinued for a period of eighteen (18) months or more.

### B.5 First Time Operation Permit [326 IAC 2-6.1]

This document shall also become a first time operating permit pursuant to 326 IAC 2-5.1-3 when, prior to start of operation, the following requirements are met:

- (a) Any modifications required by 326 IAC 2-1.1 and 326 IAC 2-7-10.5 as a result of a change in the design or operation of emissions units described by this permit have been obtained prior to obtaining an Operation Permit Validation Letter.
- (b) The attached Affidavit of Construction shall be submitted to the Office of Air Quality (OAQ), Permit Administration & Development Section, and Vigo County Air Pollution Control (VCAPC).
  - (1) If the Affidavit of Construction verifies that the facilities covered in this Construction Permit were constructed as proposed in the application, then the facilities may begin operating on the date the Affidavit of Construction is postmarked or hand delivered to IDEM and VCAPC.
  - (2) If the Affidavit of Construction does not verify that the facilities covered in this Construction Permit were constructed as proposed in the application, then the Permittee shall receive an Operation Permit Validation Letter from the Chief of the Permit Administration & Development Section prior to beginning operation of the facilities.
- (c) If construction is completed in phases; i.e., the entire construction is not done continuously, a separate affidavit must be submitted for each phase of construction. Any

permit conditions associated with operation start up dates such as stack testing for New Source Performance Standards (NSPS) shall be applicable to each individual phase.

- (d) Upon receipt of the Operation Permit Validation Letter from the Chief of the Permit Administration & Development Section, the Permittee shall attach it to this document.
- (e) The operation permit will be subject to annual operating permit fees pursuant to 326 IAC 2-7-19 (Fees).
- (f) Pursuant to 326 IAC 2-7-4(a)(1)(A)(ii) and 326 IAC 2-5.1-4, the Permittee shall apply for a Title V operating permit within twelve (12) months of the date on which the source first meets an applicability criterion of 326 IAC 2-7-2.

#### B.6 Phase Construction Time Frame

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Pursuant to 326 IAC 2-1.1-9(5)(Revocation of Permits) and 40 CFR 52.21, IDEM and VCAPC shall revoke this permit to construct if the:

- (a) Construction of Phase 1 has not begun within eighteen (18) months from the effective date of this permit or if during the construction of Phase 1, work is suspended for a continuous period of one (1) year or more.
- (b) Construction of Phase 2 has not begun within eighteen (18) months after the operation of Phase 1 or if during the construction of Phase 2, work is suspended for a continuous period of one (1) year or more.
- (c) Construction of Phase 3 has not begun within eighteen (18) months after the operation of Phase 2 or if during the construction of Phase 3, work is suspended for a continuous period of one (1) year or more.

The OAQ and VCPAC may extend such time upon satisfactory showing that an extension, formally requested by the Permittee is justified.

#### B.7 BACT Determination for Phase Constructions

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Pursuant to 40 CFR 52.21(j)(4), for phase construction projects, the determination of BACT shall be reviewed and modified as appropriate at the latest reasonable time, which occurs no later than eighteen (18) months prior to the scheduled permitted commencement of construction of each independent phase of the project.

#### B.8 Local Agency Requirement

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An application for an operation permit must be made ninety (90) days before start up to:

Vigo County Air Pollution Control  
103 South Third Street  
Terre Haute, IN 47807

The operation permit issued by Vigo County shall contain as a minimum the conditions in the Operation Conditions section of this permit.

#### B.9 NSPS Reporting Requirement

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Pursuant to the New Source Performance Standards (NSPS), Part 60.7, Part 60.8, the source owner/operator is hereby advised of the requirement to report the following at the appropriate times:

- (a) Commencement of construction date (no later than 30 days after such date);
- (b) Anticipated start-up date (not more than 60 days or less than 30 days prior to such date);
- (c) Actual start-up date (within 15 days after such date); and
- (d) Date of performance testing (at least 30 days prior to such date), when required by a condition elsewhere in this permit.

Reports are to be sent to:

Indiana Department of Environmental Management  
Compliance Data Section, Office of Air Quality  
100 North Senate Avenue P.O. Box 6015  
Indianapolis, IN 46206-6015

And

Vigo County Air Pollution Control  
103 South Third Street  
Terre Haute, IN 47807

The application and enforcement of these standards have been delegated to the IDEM, OAQ. The requirements of 40 CFR Part 60 are also federally enforceable.

## SECTION C

## SOURCE OPERATION CONDITIONS

Entire Source
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### C.1 Major Source

Pursuant to 326 IAC 2-2 (Prevention of Significant Deterioration) and 40 CFR 52.21, and 326 IAC 2-7 (Part 70 Permit Program), this source is a major source.

### C.2 Preventive Maintenance Plan [326 IAC 1-6-3]

- (a) If required by specific condition(s) in Section D of this permit, the Permittee shall prepare and maintain Preventive Maintenance Plans (PMP) ninety (90) days after the commencement of normal operations after the first construction phase, including the following information on each emissions unit:
- (1) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices;
  - (2) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions;
  - (3) Identification and quantification of the replacement parts that will be maintained in inventory for quick replacement.
- (b) The Permittee shall implement the Preventive Maintenance Plans as necessary to ensure that failure to implement the Preventive Maintenance Plan does not cause or contribute to a violation of any limitation on emissions or potential to emit.
- (c) PMP's shall be submitted to IDEM, OAQ, and VCAPC upon request and shall be subject to review and approval by IDEM, OAQ, and VCAPC. IDEM, OAQ, and VCAPC may require the Permittee to revise its Preventive Maintenance Plan whenever lack of proper maintenance causes or contributes to any violation.

### C.3 Source Modification [326 IAC 2-7-10.5]

- (a) The Permittee must comply with the requirements of 326 IAC 2-7-10.5 whenever the Permittee seeks to construct new emissions units, modify existing emissions units, or otherwise modify the source.
- (b) Any application requesting an amendment or modification of this permit shall be submitted to:

Indiana Department of Environmental Management  
Permits Branch, Office of Air Quality  
100 North Senate Avenue, P.O. Box 6015  
Indianapolis, Indiana 46206-6015

And

Vigo County Air Pollution Control  
103 South Third Street

Terre Haute, IN 47807

Any such application should be certified by the “responsible official” as defined by 326 IAC 2-7-1(34) only if a certification is required by the terms of the applicable rule.

C.4 Inspection and Entry [326 IAC 2-5.1-3(e)(4)(B)] [326 IAC 2-6.1-5(a)(4)]

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Upon presentation of proper identification cards, credentials, and other documents as may be required by law, and subject to the Permittee’s right under all applicable laws and regulations to assert that the information collected by the agency is confidential and entitled to be treated as such, the Permittee shall allow IDEM, OAQ, VCAPC, U.S. EPA, or an authorized representative to perform the following:

- (a) Enter upon the Permittee's premises where a permitted source is located, or emissions related activity is conducted, or where records must be kept under the conditions of this permit;
- (b) Have access to and copy, at reasonable times, any records that must be kept under this title or the conditions of this permit or any operating permit revisions;
- (c) Inspect, at reasonable times, any processes, emissions units (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit or any operating permit revisions;
- (d) Sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with this permit or applicable requirements; and
- (e) Utilize any photographic, recording, testing, monitoring, or other equipment for the purpose of assuring compliance with this permit or applicable requirements.

C.5 Transfer of Ownership or Operation [326 IAC 2-6.1-6(d)(3)]

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Pursuant to [326 IAC 2-6.1-6(d)(3)]

- (a) In the event that ownership of this source is changed, the Permittee shall notify IDEM, OAQ, Permits Branch, and VCAPC, within thirty (30) days of the change.
- (b) The written notification shall be sufficient to transfer the permit to the new owner by an notice-only change pursuant to 326 IAC 2-6.1-6(d)(3).
- (c) IDEM, OAQ, and VCAPC shall issue a revised permit.

The notification which shall be submitted by the Permittee does require the certification by the “authorized individual” as defined by 326 IAC 2-1.1-1.

C.6 Permit Revocation [326 IAC 2-1-9]

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Pursuant to 326 IAC 2-1-9(a)(Revocation of Permits), this permit to construct and operate may be revoked for any of the following causes:

- (a) Violation of any conditions of this permit.
- (b) Failure to disclose all the relevant facts, or misrepresentation in obtaining this permit.
- (c) Changes in regulatory requirements that mandate either a temporary or permanent

reduction of discharge of contaminants. However, the amendment of appropriate sections of this permit shall not require revocation of this permit.

- (d) Noncompliance with orders issued pursuant to 326 IAC 1-5 (Episode Alert Levels) to reduce emissions during an air pollution episode.
- (e) For any cause which establishes in the judgment of IDEM and VCAPC, the fact that continuance of this permit is not consistent with purposes of this article.

#### C.7 Opacity [326 IAC 5-1]

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Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

- (a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes, sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute non-overlapping integrated averages for a continuous opacity monitor in a six (6) hour period.

#### C.8 Fugitive Dust Emissions [326 IAC 6-4]

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The Permittee shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4 (Fugitive Dust Emissions). 326 IAC 6-4-2(4) is not federally enforceable.

#### C.9 Stack Height [326 IAC 1-7]

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The Permittee shall comply with the applicable provisions of 326 IAC 1-7 (Stack Height Provisions), for all exhaust stacks through which a potential (before controls) of twenty-five (25) tons per year or more of particulate matter or sulfur dioxide is emitted by using good engineering practices (GEP) pursuant to 326 IAC 1-7-3.

### Testing Requirements

#### C.10 Performance Testing [326 IAC 3-6]

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- (a) Compliance testing on new emissions units shall be conducted within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up, if specified in Section D of this approval. All testing shall be performed according to the provisions of 326 IAC 3-6 (Source Sampling Procedures), except as provided elsewhere in this permit, utilizing any applicable procedures and analysis methods specified in 40 CFR 51, 40 CFR 60, 40 CFR 61, 40 CFR 63, 40 CFR 75, or other procedures approved by IDEM, OAQ.

A test protocol, except as provided elsewhere in this permit, shall be submitted to:

Indiana Department of Environmental Management  
Compliance Data Section, Office of Air Quality  
100 North Senate Avenue, P. O. Box 6015  
Indianapolis, Indiana 46206-6015

And

Vigo County Air Pollution Control  
103 South Third Street  
Terre Haute, IN 47807

no later than thirty-five (35) days prior to the intended test date. The Permittee shall submit a notice of the actual test date to the above address so that it is received at least two weeks prior to the test date.

- (b) IDEM, OAQ, and VCAPC must receive all test reports within forty-five (45) days after the completion of the testing. IDEM, OAQ, and VCAPC may grant an extension, if the source submits to IDEM, OAQ, a reasonable written explanation within five (5) days prior to the end of the initial forty-five (45) day period.

The documentation submitted by the Permittee does not require certification by the "authorized individual" as defined by 326 IAC 2-1.1-1.

### **Compliance Monitoring Requirements**

#### **C.11 Compliance Monitoring [326 IAC 2-1.1-11]**

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Compliance with applicable requirements shall be documented as required by this permit. The Permittee shall be responsible for installing any necessary equipment and initiating any required monitoring related to that equipment. All monitoring and record keeping requirements not already legally required shall be implemented when operation begins.

#### **C.12 Maintenance of Monitoring Equipment [IC 13-14-1-13]**

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- (a) In the event that a breakdown of the monitoring equipment occurs, a record shall be made of the times and reasons of the breakdown and efforts made to correct the problem. To the extent practicable, supplemental or intermittent monitoring of the parameter should be implemented at intervals no less frequent than required in Section D of this permit until such time as the monitoring equipment is back in operation. In the case of continuous monitoring, supplemental or intermittent monitoring of the parameter should be implemented at intervals no less than one (1) hour until such time as the continuous monitor is back in operation.
- (b) The Permittee shall install, calibrate, quality assure, maintain, and operate all necessary monitors and related equipment. In addition, prompt corrective action shall be initiated whenever indicated.

#### **C.13 Monitoring Methods [326 IAC 3]**

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Any monitoring or testing required by Section D of this permit shall be performed according to the provisions of 326 IAC 3, 40 CFR 60, Appendix A, or other approved methods as specified in this permit.

#### **C.14 Compliance Monitoring Plan - Failure to Take Response Steps [326 IAC 1-6] [326 IAC 2-2-4]**

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- (a) The Permittee is required to implement a compliance monitoring plan to ensure that reasonable information is available to evaluate its continuous compliance with applicable requirements. This compliance monitoring plan is comprised of:
- (1) This condition;
  - (2) The Compliance Determination Requirements in Section D of this permit;



- (3) The Compliance Monitoring Requirements in Section D of this permit;
- (4) The Record Keeping and Reporting Requirements in Section C (Monitoring Data Availability, General Record Keeping Requirements, and General Reporting Requirements) and in Section D of this permit; and
- (5) A Compliance Response Plan (CRP) for each compliance monitoring condition of this permit. CRP's shall be submitted to IDEM, OAQ, and VCAPC upon request and shall be subject to review and approval by IDEM, OAQ, and VCAPC. The CRP shall be prepared within ninety (90) days after the commencement of normal operation after the first phase of construction and shall be maintained on site, and is comprised of:
  - (A) Response steps that will be implemented in the event that compliance related information indicates that a response step is needed pursuant to the requirements of Section D of this permit; and
  - (B) A time schedule for taking such response steps including a schedule for devising additional response steps for situations that may not have been predicted.
- (b) For each compliance monitoring condition of this permit, appropriate response steps shall be taken when indicated by the provisions of that compliance monitoring condition. Failure to perform the actions detailed in the compliance monitoring conditions or failure to take the response steps within the time prescribed in the Compliance Response Plan, shall constitute a violation of the permit unless taking the response steps set forth in the Compliance Response Plan would be unreasonable.
- (c) After investigating the reason for the excursion, the Permittee is excused from taking further response steps for any of the following reasons:
  - (1) The monitoring equipment malfunctioned, giving a false reading. This shall be an excuse from taking further response steps providing that prompt action was taken to correct the monitoring equipment.
  - (2) The Permittee has determined that the compliance monitoring parameters established in the permit conditions are technically inappropriate, has previously submitted a request for an administrative amendment to the permit, and such request has not been denied or;
  - (3) An automatic measurement was taken when the process was not operating; or
  - (4) The process has already returned to operating within "normal" parameters and no response steps are required.
- (d) Records shall be kept of all instances in which the compliance related information was not met and of all response steps taken.

**C.15 Actions Related to Noncompliance Demonstrated by a Stack Test**

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- (a) When the results of a stack test performed in conformance with Section C - Performance Testing, of this permit exceed the level specified in any condition of this permit, the Permittee shall take appropriate corrective actions. The Permittee shall submit a

description of these corrective actions to IDEM, OAQ, and VCAPC within thirty (30) days of receipt of the test results. The Permittee shall take appropriate action to minimize emissions from the affected emissions unit while the corrective actions are being implemented. IDEM, OAQ, and VCAPC shall notify the Permittee within thirty (30) days, if the corrective actions taken are deficient. The Permittee shall submit a description of additional corrective actions taken to IDEM, OAQ, and VCAPC within thirty (30) days of receipt of the notice of deficiency. IDEM, OAQ and VCPAC reserve the authority to use enforcement activities to resolve noncompliant stack tests.

- (b) A retest to demonstrate compliance shall be performed within one hundred twenty (120) days of receipt of the original test results. Should the Permittee demonstrate to IDEM, OAQ, and VCAPC that retesting in one hundred and twenty (120) days is not practicable, IDEM, OAQ and VCAPC may extend the retesting deadline. Failure of the second test to demonstrate compliance with the appropriate permit conditions may be grounds for immediate revocation of the permit to operate the affected emissions unit.

The documents submitted pursuant to this condition do not require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1.

## **Record Keeping and Reporting Requirements**

### **C.16 Malfunctions Report [326 IAC 1-6-2]**

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Pursuant to 326 IAC 1-6-2 (Records; Notice of Malfunction):

- (a) A record of all malfunctions, including startups or shutdowns of any facility or emission control equipment, which result in violations of applicable air pollution control regulations or applicable emission limitations shall be kept and retained for a period of three (3) years and shall be made available to the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ), Vigo County Air Pollution Control (VCAPC), or appointed representative upon request.
- (b) When a malfunction of any facility or emission control equipment occurs which lasts more than one (1) hour, said condition shall be reported to OAQ and VCAPC, using the Malfunction Report Forms (2 pages). Notification shall be made by telephone or facsimile, as soon as practicable, but in no event later than four (4) daytime business hours after the beginning of said occurrence.
- (c) Failure to report a malfunction of any emission control equipment shall constitute a violation of 326 IAC 1-6, and any other applicable rules. Information of the scope and expected duration of the malfunction shall be provided, including the items specified in 326 IAC 1-6-2(a)(1) through (6).
- (d) Malfunction is defined as any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. [326 IAC 1-2-39]

### **C.17 Monitoring Data Availability [326 IAC 2-6.1-2] [IC 13-14-1-13]**

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- (a) With the exception of performance tests conducted in accordance with Section C- Performance Testing, all observations, sampling, maintenance procedures, and record keeping, required as a condition of this permit shall be performed at all times the equipment is operating at normal representative conditions.

- (b) As an alternative to the observations, sampling, maintenance procedures, and record keeping of subsection (a) above, when the equipment listed in Section D of this permit is not operating, the Permittee shall either record the fact that the equipment is shut down or perform the observations, sampling, maintenance procedures, and record keeping that would otherwise be required by this permit.
- (c) If the equipment is operating but abnormal conditions prevail, additional observations and sampling should be taken with a record made of the nature of the abnormality.
- (d) If for reasons beyond its control, the operator fails to make required observations, sampling, maintenance procedures, or record keeping, reasons for this must be recorded.
- (e) At its discretion, IDEM and VCAPC may excuse such failure providing adequate justification is documented and such failures do not exceed five percent (5%) of the operating time in any quarter.
- (f) Temporary, unscheduled unavailability of staff qualified to perform the required observations, sampling, maintenance procedures, or record keeping shall be considered a valid reason for failure to perform the requirements stated in (a) above.

**C.18 General Record Keeping Requirements [326 IAC 2-6.1-2]**

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- (a) Records of all required monitoring data and support information shall be retained for a period of at least five (5) years from the date of monitoring sample, measurement, report, or application. These records shall be kept at the source location for a minimum of three (3) years and available upon the request of an IDEM, OAQ, and VCAPC representative. The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request. If the Commissioner or Vigo County Air Pollution Control makes a written request for records to the Permittee, the Permittee shall furnish the records to the Commissioner or Vigo County Air Pollution Control within a reasonable time.
- (b) Records of required monitoring information shall include, where applicable:
  - (1) The date, place, and time of sampling or measurements;
  - (2) The dates analyses were performed;
  - (3) The company or entity performing the analyses;
  - (4) The analytic techniques or methods used;
  - (5) The results of such analyses; and
  - (6) The operating conditions existing at the time of sampling or measurement.
- (c) Support information shall include, where applicable:
  - (1) Copies of all reports required by this permit;
  - (2) All original strip chart recordings for continuous monitoring instrumentation;
  - (3) All calibration and maintenance records;
  - (4) Records of preventive maintenance shall be sufficient to demonstrate that failure to

implement the Preventive Maintenance Plan did not cause or contribute to a violation of any limitation on emissions or potential to emit. To be relied upon subsequent to any such violation, these records may include, but are not limited to: work orders, parts inventories, and operator's standard operating procedures. Records of response steps taken shall indicate whether the response steps were performed in accordance with the Compliance Response Plan required by Section C - Compliance Monitoring Plan - Failure to take Response Steps, of this permit, and whether a deviation from a permit condition was reported. All records shall briefly describe what maintenance and response steps were taken and indicate who performed the tasks.

- (d) All record keeping requirements not already legally required shall be implemented when operation begins.

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C.19 General Reporting Requirements [326 IAC 2-1.1-11] [326 IAC 2-6.1-2] [IC 13-14-1-13]

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- (a) To affirm that the source has met all the compliance monitoring requirements stated in this permit the source shall submit a Semi-annual Compliance Monitoring Report. Any deviation from the requirements and the date(s) of each deviation must be reported. The Compliance Monitoring Report shall include the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (b) The report required in (a) of this condition and reports required by conditions in Section D of this permit shall be submitted to:

Indiana Department of Environmental Management  
Compliance Data Section, Office of Air Quality  
100 North Senate Avenue, P. O. Box 6015  
Indianapolis, Indiana 46206-6015

And

Vigo County Air Pollution Control  
103 South Third Street  
Terre Haute, IN 47807

- (c) Unless otherwise specified in this permit, any notice, report, or other submission required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ, and VCAPC on or before the date it is due.
- (d) Unless otherwise specified in this permit, any semi-annual report shall be submitted within thirty (30) days of the end of the reporting period. The reports require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).
- (e) All instances of deviations must be clearly identified in such reports. A reportable deviation is an exceedance of a permit limitation or a failure to comply with a requirement of the permit or a rule. It does not include:
- (1) An excursion from compliance monitoring parameters as identified in Section D of this permit unless tied to an applicable rule or limit; or
  - (2) A malfunction as described in 326 IAC 1-6-2; or

- (3) Failure to implement elements of the Preventive Maintenance Plan unless lack of maintenance has caused or contributed to a deviation.
- (4) Failure to make or record information required by the compliance monitoring provisions of Section D unless such failure exceeds 5% of the required data in any calendar quarter.

A Permittee's failure to take the appropriate response step when an excursion of a compliance monitoring parameter has occurred or failure to monitor or record the required compliance monitoring is a deviation.

- (f) Any corrective actions or response steps taken as a result of each deviation must be clearly identified in such reports.
- (g) The first report shall cover the period commencing on the date start of normal operation after the first phase of construction and ending on the last day of the reporting period.

## SECTION D.1 FACILITY CONDITIONS – Simple Cycle Operation

Four (4) natural gas-fired combustion turbines designated as units CT11, CT12, CT21, CT22, with a maximum heat input capacity of 1,490.5 MMBtu/hr (per unit on a lower heating value basis), and exhausts to stacks designated as E11B, E12B, E21B and E22B, respectively, for use when operating in simple cycle.

(The information describing the process contained in this facility description box is descriptive information, and does not constitute enforceable conditions.)

### Emission Limitations and Standards

#### D.1.1 Prevention of Significant Deterioration [326 IAC 2-2]

Pursuant to 326 IAC 2-2 (PSD), this new source is subject to the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration) for emissions of PM, PM<sub>10</sub>, SO<sub>2</sub>, CO, NO<sub>x</sub>, and VOC because the potential to emit for these pollutants exceed the PSD major significant thresholds. Therefore, the PSD provisions require that this new source be reviewed to ensure compliance with the National Ambient Air Quality Standards (NAAQS), the applicable PSD air quality increments, and the requirements to apply the Best Available Control Technology (BACT) for the affected pollutants.

#### D.1.2 Particulate Matter (PM and PM<sub>10</sub>) Emission Limitations for Combustion Turbines

Pursuant to 326 IAC 2-2 (PSD Requirements) the total PM, is the sum of filterable PM, and PM<sub>10</sub> (filterable and condensable), emissions from each combustion turbine stack shall not exceed 0.012 pounds per MMBtu on a lower heating value basis, which is equivalent to eighteen (18) pounds per hour for each combustion turbine.

#### D.1.3 Opacity Limitations

Pursuant to 326 IAC 2-2 (PSD Requirements) the opacity from each associated combustion turbine stack shall not exceed twenty (20) percent (6-minute average), except for one 6-minute period per hour of not more than 27 percent. The opacity standards apply at all times, except during periods of startup, shutdown or malfunction. This satisfies the opacity limitations required by 326 IAC 5-1 (Opacity Limitations).

#### D.1.4 Startup and Shutdown Limitations for Combustion Turbines

Pursuant to 326 IAC 2-2 (PSD Requirements), a startup or shutdown is defined as operation less than fifty (50) percent load. Each combustion turbine-generating unit shall comply with the following:

- (a) A startup or shutdown period shall not exceed two (2) hours. Each turbine shall not exceed 250 hours per year for startups and 42 hours per year for shutdowns.
- (b) The NO<sub>x</sub> emissions from each combustion turbine stack shall not exceed 32.5 tons per year for startup and shutdown emissions. Each combustion turbine shall not exceed 472 pounds of NO<sub>x</sub> per startup and 284 pounds of NO<sub>x</sub> per shutdown.
- (c) The CO emissions from each combustion turbine stack shall not 41.3 tons per year for startup and shutdown emissions. Each combustion turbine shall not exceed 600 pounds of CO per startup and 360 pounds of CO per shutdown.

#### D.1.5 Nitrogen Oxides (NO<sub>x</sub>) Emission Limitations for Combustion Turbines

- (a) Pursuant to 326 IAC 2-2 (PSD Requirements) each combustion turbine generating unit shall comply with the following, excluding startup and shutdown:
  - (1) During normal simple cycle operation (fifty (50) percent load or more), the NO<sub>x</sub> emissions from each combustion turbine shall not exceed 9.0 ppmvd corrected to fifteen (15) percent oxygen, based on a three (3) hour averaging period, which is equivalent to 54.0 pounds per hour for each combustion turbine.
  - (2) Each combustion turbine shall be equipped with dry low-NO<sub>x</sub> combustors and operated using good combustion practices to control NO<sub>x</sub> emissions.
  - (3) Use natural gas as the only fuel.
- (b) Pursuant to 326 IAC 2-2 (PSD Requirements), the annual NO<sub>x</sub> emission from each of the four (4) combustion turbines, excluding startup and shutdown emissions, shall not exceed 236.52 tons per year.

#### D.1.6 Carbon Monoxide (CO) Emission Limitations for Combustion Turbines

- (a) Pursuant to 326 IAC 2-2 (PSD Requirements), each combustion turbine shall comply with the following, excluding startup and shutdown:
  - (1) During normal simple cycle operation (fifty (50) percent load or more), the CO emissions from each combustion turbine shall not exceed 9 ppmvd corrected to fifteen (15) percent oxygen, based on a 24 hour averaging period, which is equivalent to 26.4 pounds per hour from each combustion turbine.
  - (2) Good combustion practices shall be applied to minimize CO emissions.
  - (3) Use natural gas as the only fuel.
- (b) Pursuant to 326 IAC 2-2 (PSD Requirements), the annual CO emission from each of the four (4) combustion turbines, excluding startup and shutdown emissions, shall not exceed 115.63 tons per year.

#### D.1.7 Sulfur Dioxide (SO<sub>2</sub>) Emission Limitations for Combustion Turbines

Pursuant to 326 IAC 2-2 (PSD Requirements), each combustion turbine shall comply with the following, excluding startup and shutdown:

- (1) During normal simple cycle operation (fifty (50) percent load or more), the SO<sub>2</sub> emissions from each combustion turbine shall not exceed 0.0028 pounds per MMBtu on a lower heating values basis, which is equivalent to 4.2 pounds per hour from each combustion turbine.
- (2) The use of low sulfur natural gas as the only fuel for the four (4) combustion turbines. The sulfur content of the natural gas shall not exceed 0.007 percent by weight (two (2) grains per 100 scf)
- (3) Perform good combustion practices.

#### D.1.8 Volatile Organic Compound (VOC) Emission Limitations for Combustion Turbines

Pursuant to 326 IAC 8-1-6 (VOC BACT Requirements), the following requirements must be met, excluding startup and shutdown:

- (1) The VOC emissions from each combustion turbine shall not exceed 0.0024 pounds per MMBtu on a lower heating value basis, which is equivalent to 3.7 pounds VOC per hour for each combustion turbine.
- (2) The use of natural gas as the only fuel
- (3) Good combustion practice shall be implemented to minimize VOC emissions.

#### D.1.9 40 CFR 60, Subpart GG (Stationary Gas Turbines)

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The four (4) natural gas combustion turbines are subject to 40 CFR Part 60, Subpart GG (Stationary Gas Turbines) because the heat input at peak load is equal to or greater than 10.7 gigajoules per hour (10 MMBtu per hour), based on the lower heating value of the fuel fired.

Pursuant to 326 IAC 12-1 and 40 CFR 60, Subpart GG (Stationary Gas Turbines), the Permittee shall:

- (1) Limit nitrogen oxides emissions from the natural gas turbines to 0.0113% by volume at 15% oxygen on a dry basis, as required by 40 CFR 60.332, to:

$$STD = 0.0075 \frac{(14.4)}{Y} + F,$$

where STD = allowable NO<sub>x</sub> emissions (percent by volume at 15 percent oxygen on a dry basis).

Y = manufacturer's rated heat rate at manufacturer's rated load (kilojoules per watt hour) or, actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the facility. The value of Y shall not exceed 14.4 kilojoules per watt-hour.

F = NO<sub>x</sub> emission allowance for fuel-bound nitrogen as defined in paragraph (a)(3) of 40 CFR 60.332.

- (2) Limit sulfur dioxide emissions, as required by 40 CFR 60.333, to 0.015 percent by volume at 15 percent oxygen on a dry basis, or use natural gas fuel with a sulfur content less than or equal to 0.8 percent by weight; Compliance with Condition D.1.7 constitutes compliance with this requirement.

#### D.1.10 Formaldehyde Limitations

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Pursuant to 326 IAC 2-1.1-5 (Air Quality Requirements), the formaldehyde emissions from each combustion turbine stack shall not exceed 0.00036 pounds of formaldehyde per MMBtu on a lower heating value basis.

#### D.1.11 Operational Limitation

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Pursuant to 326 IAC 2-2 (PSD Requirements), conditions contained within this section of the permit (D.1 Simple Cycle Operation) shall be followed (per turbine) when combustion turbine exhaust is routed through the integral bypass stack designated as E11B, E12B, E21B, and E22B. During periods when turbine exhaust is not routed through the integral bypass stacks (E11B, E12B, E21B, and E22B), the Permittee shall follow the conditions contained in Section D.2 Combined Cycle Operation.

#### D.1.12 Preventive Maintenance Plan [326 IAC 1-6-3]

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A Preventive Maintenance Plan, in accordance with Section C - Preventive Maintenance Plan, of this permit, is required for each combustion turbine.

### Compliance Determination Requirements



#### D.1.13 Performance Testing

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- (a) Pursuant to 326 IAC 3-5 the Permittee shall conduct a performance test, not later than one-hundred and eighty days (180) after a facility startup or monitor installation, on the combustion turbine exhaust stacks (E11B, E12B, E21B, and E22B) in order to certify continuous emission monitoring systems for NO<sub>x</sub> and CO.
- (b) Within sixty (60) days after initial startup, but no later than one-hundred and eighty (180) days after initial startup, the Permittee shall perform formaldehyde test for each combustion turbine stack (E11B, E12B, E21B, and E22B) utilizing methods approved by the Commissioner when operating 60%, 75%, and 100% load. These tests shall be performed in accordance with Section C – Performance Testing, in order to verify the formaldehyde emission factor as specified in Condition D.1.10.
- (c) Within sixty (60) days after initial startup, but no later than one-hundred and eighty (180) days after initial startup, the Permittee shall perform NO<sub>x</sub> and CO stack tests for each turbine (stacks designated as E11B, E12B, E21B, and E22B) during a startup/shutdown period, utilizing methods as approved by the Commissioner. These tests shall be performed in accordance with Section C – Performance Testing, in order to document compliance with Condition D.1.4.
- (d) Within sixty (60) days after achieving maximum production rate, but no later than one-hundred and eighty (180) days after initial startup, the Permittee shall conduct NO<sub>x</sub> and SO<sub>2</sub> stack tests for each turbine utilizing methods approved by the Commissioner. These tests shall be performed in accordance with 40 CFR 60.335 and Section C – Performance Testing, in order to document compliance with Condition D.1.9.
- (e) Within sixty (60) days after initial startup, but no later than one-hundred eighty (180) after initial startup, the Permittee shall perform PM, PM<sub>10</sub> (filterable and condensable), and VOC stack tests for each combustion turbine stack (E11B, E12B, E21B, and E22B) utilizing methods approved by the Commissioner. These test shall be performed in accordance with Section C – Performance Testing, in order to document compliance with Condition D.1.2 and D.1.8(1).
- (f) IDEM, OAQ and VCAPC retain the authority under 326 IAC 2-1-4(f) to require the Permittee to perform additional and future compliance testing as necessary.

#### D.1.14 40 CFR Part 60, Subpart GG Compliance Requirements (Stationary Gas Turbines)

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Pursuant to 40 CFR Part 60, Subpart GG (Stationary Gas Turbines), the Permittee shall monitor the nitrogen and sulfur content of the natural gas on a monthly basis as follows:

- (a) Determine compliance with the nitrogen oxide and sulfur dioxide standards in 40 CFR 60.332 and 60.333(a), per requirements described in 40 CFR 60.335(c);
- (b) Determine the sulfur content of the natural gas being fired in the turbine by ASTM Methods D 1072-80, D 3030-81, D 4084-82, or D 3246-81. The applicable ranges of some ASTM methods mentioned are not adequate to measure the levels of sulfur in some fuel gases. Dilution of samples before analysis (with verification of the dilution ratio) may be used, subject to the approval of the Administrator; and
- (c) Determine the nitrogen content of the natural gas being fired in the turbine by using analytical methods and procedures that are accurate to within 5 percent and are approved

by the Administrator.

The analyses required above may be performed by the owner or operator, a service contractor retained by the owner or operator, the fuel vendor or any other qualified agency.

Owners, operators or fuel vendors may develop custom fuel schedules for determination of the nitrogen and sulfur content based on the design and operation of the affected facility and the characteristics of the fuel supply. These schedules shall be substantiated with data and must be approved by the Administrator before they can be used to comply with the above requirements.

#### D.1.15 Continuous Emission Monitoring

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- (a) The owner or operator of a new source with an emission limitation or permit requirement established under 326 IAC 2-5.1-3 and 326 IAC 2-2, shall be required to install a continuous emissions monitoring system or alternative monitoring plan as allowed under the Clean Air Act and 326 IAC 3-5-1(d).
- (b) The Permittee shall install, calibrate, certify, operate and maintain a continuous emissions monitoring system for each combustion turbine stack for NO<sub>x</sub>, CO, and O<sub>2</sub> (E11B, E12B, E21B and E22B) in accordance with 326 IAC 3-5-2 and 3-5-3.
  - (1) The continuous emission monitoring system (CEMS) shall measure NO<sub>x</sub> and CO emissions rates in pounds per hour, uncorrected parts per million, and parts per million on a dry volume basis (ppmvd) corrected to 15% O<sub>2</sub>. The use of CEMS to measure and record the NO<sub>x</sub> and CO hourly limits, is sufficient to demonstrate compliance with the limitations established in the BACT analysis and set forth in the permit. To demonstrate compliance with the NO<sub>x</sub> limit, the source shall take an average of the ppmvd corrected to 15% O<sub>2</sub> over a three (3) hour averaging period. To demonstrate compliance with the CO limit, the source shall take an average of the ppmvd corrected to 15% O<sub>2</sub> over a twenty four (24) hour averaging period. The source shall maintain records of the ppmvd corrected to 15% O<sub>2</sub> and the pounds per hour.
  - (2) The Permittee shall determine compliance with Conditions D.1.4 utilizing data from the NO<sub>x</sub>, CO, and O<sub>2</sub> CEMS, the fuel flow meter, and Method 19 calculations.
  - (3) The Permittee shall submit to IDEM, OAQ, and VCAPC within ninety (90) days after monitor installation, a complete written continuous monitoring standard operating procedure (SOP), in accordance with the requirements of 326 IAC 3-5-4.
  - (4) The Permittee shall record the output of the system and shall perform the required record keeping, pursuant to 326 IAC 3-5-6, and reporting, pursuant to 326 IAC 3-5-7.
  - (5)

#### **Record Keeping and Reporting Requirements [326 IAC 2-5.1-3(e)(2)] [326 IAC 2-6.1-5(a)(2)]**

#### D.1.16 Record Keeping Requirements

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- (a) To document compliance with Condition D.1.2, D.1.5 through D.1.9, and D.1.11, the Permittee shall maintain records of the following:
  - (1) Amount of natural gas combusted (in MMCF) per turbine during each month
  - (2) The percent sulfur content of the natural gas

- (3) The average heat input, on a lower heating value basis, of each turbine on a 30-day rolling average.
- (b) To document compliance with Condition D.1.4, the Permittee shall maintain records of the following:
  - (1) The type of operation (i.e., startup or shutdown) with supporting operational data
  - (2) The total number of minutes for startup or shutdown per 24-hour period per turbine
  - (3) The CEMS data, fuel flow meter data, and Method 19 calculations corresponding to each startup and shutdown period.
- (c) To document compliance with Conditions D.1.5 and D.1.6, the Permittee shall maintain records of the emission rates of NO<sub>x</sub> and CO in pounds per hour and ppmvd corrected to 15% oxygen.
- (d) To document compliance with Condition D.1.15, the Permittee shall maintain records, including raw data of all monitoring data and supporting information, for a minimum of five (5) years from the date as described in 326 IAC 3-5-7(a). The records shall include the information described in 326 IAC 3-5-7(b).
- (e) To document compliance with Condition D.1.9, the source shall maintain records of the natural gas analyses, including the sulfur and nitrogen content of the gas, for a period of three (3) years.
- (f) A record of the hours of operation per year per turbine for simple cycle operation shall be maintained.
- (g) All records shall be maintained in accordance with Section C – General Record Keeping Requirements, of this permit

#### D.1.17 Reporting Requirements

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The Permittee shall submit the following information on a quarterly basis:

- (a) Records of excess NO<sub>x</sub> and CO emissions (defined in 326 IAC 3-5-7 and 40 CFR Part 60.7) from the continuous emissions monitoring system for each parameter described in Condition D.1.15. These reports shall be submitted within thirty (30) calendar days following the end of each calendar quarter and in accordance with Section C – General Reporting Requirements of this permit.
- (b) The Permittee shall report periods of excess emissions, as required by 40 CFR 60.334(c)
- (c) A quarterly summary of the CEMs data to document compliance with D.1.5(a)(1) and D.1.6(a)(1) shall be submitted to the address listed in Section C – General Reporting Requirements, of this permit, within thirty (30) days after the end of the quarter being reported.
- (d) A quarterly summary of the total number of startup and shutdown hours of operation and emissions corresponding to startup and shutdown to document compliance with Condition D.1.4, shall be submitted to the address listed in Section C – General Reporting Requirements, of this permit, within thirty (30) days after the end of the quarter being reported.

## SECTION D.2 FACILITY CONDITIONS – Combined Cycle Operation

- (a) Four (4) natural gas-fired combustion turbines, designated as units CT11, CT12, CT21, CT22, with a maximum heat input capacity of 1,490.5 MMBtu/hr (per unit on a lower heating value basis), and exhausts to stacks designated as E11B, E12B, E21B and E22B, respectively, for use when operating in simple cycle. During combined cycle operation exhaust goes to stacks designated E11A, E12A, E21A and E22A, respectively.
- (b) Four (4) duct burners, designated as units DB11, DB12, DB21, DB22, with a maximum heat input capacity of 300 MMBtu/hr (per unit on a higher heating value basis) each and exhausts to stacks designated E11A, E12A, E21A, E22A, respectively.
- (c) Four (4) heat recovery steam generators, designated as units HRSG11, HRSG12, HRSG21, HRSG22.
- (d) Four (4) selective catalytic reduction systems, designated as units SCR11, SCR12, SCR21, SCR22.
- (e) Two (2) cooling towers, designated as units COOL1 and COOL2, exhausts to stacks designated E3 and E4, respectively.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

### Emission Limitations and Standards

#### D.2.1 Prevention of Significant Deterioration [326 IAC 2-2]

Pursuant to 326 IAC 2-2 (PSD), this new source is subject to the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration) for emissions of PM, PM<sub>10</sub>, SO<sub>2</sub>, CO, NO<sub>x</sub>, and VOC because the potential to emit for these pollutants exceed the PSD major significant thresholds. Therefore, the PSD provisions require that this new source be reviewed to ensure compliance with the National Ambient Air Quality Standards (NAAQS), the applicable PSD air quality increments, and the requirements to apply the Best Available Control Technology (BACT) for the affected pollutants.

#### D.2.2 Particulate Matter (PM/PM<sub>10</sub>) Emission Limitations for Combustion Turbines/Duct Burners

- (a) Pursuant to 326 IAC 2-2 (PSD Requirements), the PM (filterable) or PM<sub>10</sub> (filterable and condensable), emissions from each combustion turbine shall not exceed 0.012 pounds per MMBtu (on a lower heating value basis) which is equivalent to eighteen (18) pounds per hour for each combustion turbine.
- (b) Pursuant to 326 IAC 2-2 (PSD Requirements), the PM (filterable) or PM<sub>10</sub> (filterable and condensable), emissions from each duct burner shall not exceed 0.0075 pounds per MMBtu on a higher heating value basis, which is equivalent to 2.2 pounds per hour.
- (c) Pursuant to 326 IAC 2-2 (PSD Requirements), the PM (filterable) or PM<sub>10</sub> (filterable and condensable), emissions from each combustion turbine when its associated duct burner is operating, shall not exceed 20.2 pounds per hour for each combustion turbine and duct burner.

#### D.2.3 Opacity Limitations

Pursuant to 326 IAC 2-2 (PSD Requirements) the opacity from each associated combustion turbine stack shall not exceed twenty (20) percent (6-minute average), except for one 6-minute period per hour of not more than 27 percent. The opacity standards apply at all times, except during periods of startup, shutdown or malfunction. This satisfies the opacity limitations required by 326 IAC 5-1 (Opacity Limitations).

#### D.2.4 Particulate Matter Emissions (PM/PM<sub>10</sub>) for Cooling Towers

Pursuant to 326 IAC 2-2 (PSD Requirements) each cooling tower shall comply with the following:

- (1) PM emissions shall not exceed 1.41 pounds per hour, and
- (2) Employ good design and operation practices to limit emissions from the cooling towers.
- (3) For compliance purposes, cooling tower PM emissions shall be calculated using emission factors from USEPA AP-42 Section 13.4.

#### D.2.5 Startup and Shutdown Limitations for Combustion Turbines

Pursuant to 326 IAC 2-2 (PSD Requirements), following applies to each combustion turbine:

- (a) A startup is defined as the operation in the period of time from the initiation of combustion until the turbine reaches a minimum load of seventy (70) percent or instantaneous outlet SCR NO<sub>x</sub> concentration reaches level less than 3.0 ppm at 15% O<sub>2</sub> whichever occurs earlier.
- (b) A shutdown is defined as operation at less than fifty (50) percent load descending to flame out.
- (c) An event is defined as exactly one (1) startup and exactly one (1) shutdown and shall not exceed six and five-tenth (6.5) hours.
- (d) Each turbine shall not exceed 1,000 hours in 12 consecutive month period in startup and shutdown mode with compliance demonstrated at the end of each month.
- (e) The NO<sub>x</sub> emissions from each combustion turbine stack shall not exceed 64.9 tons in 12 consecutive month period for startup and shutdown duration with compliance demonstrated at the end of each month. Each combustion turbine shall not exceed 997 pounds of NO<sub>x</sub> emissions per event.
- (f) The CO emissions from each combustion turbine stack shall not exceed 312.5 tons in 12 consecutive month period for startup and shutdown duration with compliance demonstrated at the end of each month. Each combustion turbine shall not exceed 7,911 pounds of CO emissions per event.

#### D.2.6 Nitrogen Oxides (NO<sub>x</sub>) Emission Limitations for Combustion Turbines/Duct Burners

- (a) Pursuant to 326 IAC 2-2 (PSD Requirements) each combustion turbine/steam generating unit shall comply with the following, excluding startup and shutdown:
  - (1) During normal combined cycle operation, the NO<sub>x</sub> emissions from each combustion turbine stack shall not exceed 3.0 ppmvd corrected to fifteen (15) percent oxygen, based on a three (3) hour averaging period, which is equivalent to 17.89 pounds per hour for each combustion turbine.
  - (2) During normal combined cycle operation, the NO<sub>x</sub> emissions from each combustion

turbine stack, when its associated duct burner is operating, shall not exceed 3.0 ppmvd corrected to fifteen (15) percent oxygen, based on a three (3) hour averaging period, which is equivalent to 18 pounds per hour for each combustion turbine and duct burner.

- (3) The duct burners shall not be operated until normal operation begins.
  - (4) Each combustion turbine shall be equipped with dry low-NO<sub>x</sub> burners and operated using good combustion practices to control NO<sub>x</sub> emissions.
  - (5) A selective catalytic reduction (SCR) system shall be installed and operated at all times, except during periods of startup and shutdown, to control NO<sub>x</sub> emissions.
  - (6) Use natural gas as the only fuel.
- (b) Pursuant to 326 IAC 2-2 (PSD Requirements), the annual NO<sub>x</sub> emissions from each of the four (4) combustion turbines and associated duct burners, excluding startup and shutdown emissions, shall not exceed 78.36 tons per year.

#### D.2.7 Carbon Monoxide (CO) Emission Limitations for Combustion Turbines/Duct Burners

- (a) Pursuant to 326 IAC 2-2 (PSD Requirements), each steam generating unit shall comply with the following, excluding startup and shutdown:
- (1) During normal combined cycle operation, the CO emissions from each combustion turbine shall not exceed 9 ppmvd corrected to 15% O<sub>2</sub> on a 24 hour averaging period, which is equivalent to 26.4 pounds per hour for each combustion turbine.
  - (2) During normal operation, the CO emissions from each combustion turbine stack, when its associated duct burner is operating, shall not exceed 14 ppmvd corrected to 15% O<sub>2</sub> on a 24 hour averaging period, which is equivalent to 51.0 pounds per hour for each combustion turbine and duct burner.
  - (3) The duct burners shall not be operated until normal operation begins.
  - (4) Good combustion practices shall be applied to minimize CO emissions.
  - (5) Use natural gas as the only fuel
- (b) Pursuant to 326 IAC 2-2 (PSD Requirements), the annual CO emissions from each of the four (4) combustion turbines and associated duct burners, excluding startup and shutdown emissions, shall not exceed 131.86 tons per year.

#### D.2.8 Sulfur Dioxide (SO<sub>2</sub>) Emission Limitations for Combustion Turbines/Duct Burners

Pursuant to 326 IAC 2-2 (PSD Requirements), each combustion turbine and duct burner shall comply with the following, excluding startup and shutdown:

- (1) During normal combined cycle operation, the SO<sub>2</sub> emissions from each combustion turbine shall not exceed 0.0028 pounds per MMBtu on a lower heating value basis, which is equivalent to 4.2 pounds per hour for each combustion turbine.
- (2) During normal operation of each duct burner, the SO<sub>2</sub> emissions shall not exceed 0.001 pounds per MMBtu on a higher heating value basis, which is equivalent to 0.2 pounds per hour for each combustion turbine.

- (3) During normal combined cycle operation of each combustion turbine when its associated duct burner is operating, the SO<sub>2</sub> emissions from each turbine stack shall not exceed 4.4 pounds per hour.
- (4) The use of low sulfur natural gas as the only fuel for the combustion turbines and duct burners. The sulfur content of the natural gas shall not exceed 0.007 percent by weight (two (2) grains per 100 scf).
- (5) Perform good combustion practice.

#### D.2.9 Volatile Organic Compound (VOC) Emission Limitations for Combustion Turbines/Duct Burners

Pursuant to 326 IAC 8-1-6 (VOC Requirements) and 326 2-2 (PSD Requirements), the following requirements must be met, excluding startup and shutdown:

- (1) The VOC emissions from each combustion turbine shall not exceed 0.0025 pounds per MMBtu on a lower heating value basis, which is equivalent to 3.7 pounds VOC per hour for each combustion turbine.
- (2) The VOC emissions from each duct burner shall not exceed 0.005 pounds per MMBtu on a higher heating value basis, which is equivalent to 1.6 pounds VOC per hour.
- (3) The VOC emissions from each combustion turbine stack, when its associated duct burner is operating shall not exceed 5.3 pounds of VOC per hour.
- (4) The use of natural gas as the only fuel.
- (5) Good combustion practice shall be implemented to minimize VOC emissions.

#### D.2.10 40 CFR 60, Subpart GG (Stationary Gas Turbines)

The four (4) natural gas combustion turbines are subject to 40 CFR Part 60, Subpart GG (Stationary Gas Turbines) because the heat input at peak load is equal to or greater than 10.7 gigajoules per hour (10 MMBtu per hour), based on the lower heating value of the fuel fired.

Pursuant to 326 IAC 12-1 and 40 CFR 60, Subpart GG (Stationary Gas Turbines), the Permittee shall:

- (1) Limit nitrogen oxides emissions from the natural gas turbines to 0.0113% by volume at 15% oxygen on a dry basis, as required by 40 CFR 60.332, to:

$$STD = 0.0075 \frac{(14.4)}{Y} + F,$$

where STD = allowable NO<sub>x</sub> emissions (percent by volume at 15 percent oxygen on a dry basis).

Y = manufacturer's rated heat rate at manufacturer's rated load (kilojoules per watt hour) or, actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the facility. The value of Y shall not exceed 14.4 kilojoules per watt-hour.

F = NO<sub>x</sub> emission allowance for fuel-bound nitrogen as defined in paragraph (a)(3) of 40 CFR 60.332.

- (2) Limit sulfur dioxide emissions, as required by 40 CFR 60.333, to 0.015 percent by volume at 15 percent oxygen on a dry basis, or use natural gas fuel with a sulfur content less than

or equal to 0.8 percent by weight; Compliance with Condition D.2.8 constitutes compliance with this condition.

#### **D.2.11 40 CFR Part 60, Subpart Da (Electric Utility Steam Generating Units)**

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The heat recovery steam generator (HRSG) duct burners (DB) are subject to 40 CFR Part 60, Subpart Da because the heat input capacity is greater than 250 MMBtu/hr on a higher heating value basis.

Pursuant to 40 CFR Part 60, Subpart Da, the Permittee shall:

- (a) The opacity from each combustion turbine stack, when its associated duct burner is operating, shall not exceed twenty (20) percent (6-minute average), except for on 6-minute period per hour of not more than 27 percent. The opacity standards apply at all times, except during periods of startup, shutdown or malfunction. This satisfies the opacity limitations required by 326 IAC 5-1 (Opacity Limitations).
- (b) The PM emissions from each duct burner shall not exceed 0.03 pounds per MMBtu heat input on a higher heating value basis. Compliance with Condition D.2.2 constitutes compliance with this condition.
- (c) Each duct burner shall not exceed 1.6 lb/MW-hr NO<sub>x</sub>, on a thirty (30) day rolling average.
- (d) Each duct burner shall not exceed 0.20 pounds SO<sub>2</sub> per MMBtu heat input, determined on a 30-day rolling average basis. Compliance with condition D.2.8 constitutes compliance with this condition.

#### **D.2.12 Formaldehyde Limitations**

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Pursuant to 326 IAC 2-1.1-5 (Air Quality Requirements), the formaldehyde emissions from each combustion turbine and duct burner shall not exceed 0.00036 pounds of formaldehyde per MMBtu, excluding startup and shutdown.

#### **D.2.13 Ammonia Limitations**

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Pursuant to 326 IAC 2-1.1-5 (Air Quality Requirements), the ammonia emissions from each combustion turbine stack shall not exceed ten (10) ppmvd corrected to 15% O<sub>2</sub>.

#### **D.2.14 Preventive Maintenance Plan [326 IAC 1-6-3]**

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A Preventive Maintenance Plan, in accordance with Section C - Preventive Maintenance Plan, of this permit, is required for each combustion turbine and its control device.

### **Compliance Determination Requirements**

#### **D.2.15 Performance Testing**

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- (a) Pursuant to 326 IAC 3-5 the Permittee shall conduct a performance test, no later than one-hundred and eighty days (180) after the facility startup or monitor installation, on the combustion turbine exhaust stack (E 11A, E12A, E21A, and E22A) in order to certify the continuous emission monitoring systems for NO<sub>x</sub> and CO.
- (b) Within sixty (60) days of achieving maximum production rate, but no later than one-hundred and eighty (180) days after initial startup, the Permittee shall perform formaldehyde stack tests for turbines utilizing a method approved by the Commissioner when operating at 60%, 75% and 100% loads on stacks E21A and E22A only. In addition during the same time period specified earlier, the Permittee shall perform formaldehyde stack tests for



combustion turbines for stacks E11A, E12A, E21A and E22A when operating the combustion turbines at 100% load and each duct burner being fired to full capacity. These tests shall be performed in accordance with Section C – Performance Testing, in order to verify the formaldehyde emission limit specified in Condition D.2.12.

- (c) Within sixty (60) days of achieving maximum production rate, but no later than one-hundred and eighty (180) days after initial startup, the Permittee shall perform NO<sub>x</sub> and CO stack tests for each combustion turbine stack (E11A, E12A, E21A, and E22A) during a startup/shutdown period, utilizing methods approved by the Commissioner. These tests shall be performed in accordance with Section C – Performance Testing, in order to document compliance with Condition D.2.5.
- (d) Within sixty (60) days of achieving maximum production rate, but no later than one-hundred and eighty (180) days after initial startup, the Permittee shall conduct NO<sub>x</sub> and SO<sub>2</sub> stack tests for each combustion turbine stack (E11A, E12A, E21A, and E22A) utilizing methods approved by the Commissioner. These tests shall be performed in accordance with 40 CFR 60.335 and Section C – Performance Testing, in order to document compliance with Condition D.2.10.
- (e) Within sixty (60) days of achieving maximum production rate, but no later than one-hundred and eighty (180) days after initial startup, the Permittee shall perform PM, ammonia, and VOC stack tests for each combustion turbine stack (E11A, E12A, E21A, and E22A) utilizing methods approved by the Commissioner. These tests shall be performed in accordance with 40 CFR 60.335, 40 CFR 60.48(a), and Section C – Performance Testing, in order to document compliance with D.2.2(b), D.2.9, and D.2.13.
- (f) IDEM, OAQ and VCAPC retain the authority under 326 IAC 2-1-4(f) to require the Permittee to perform additional and future compliance testing as necessary.

#### D.2.16 Oxides of Nitrogen NO<sub>x</sub> (SCR operation) [326 IAC 2-2]

- (a) Pursuant to 326 IAC 2-2 (PSD requirements), the Permittee shall determine the lowest SCR inlet flue gas temperature during the stack test required in condition D.2.15 (a) and (c) that demonstrates compliance with limits in condition D.2.6, as approved by IDEM.
- (b) From the date of the valid stack test, during a startup, the Permittee shall measure and record the SCR inlet flue gas temperature and start ammonia injection in the SCR units to control NO<sub>x</sub> emissions from the gas turbines, as soon as the SCR inlet flue gas temperature reaches the temperature determined in part (a) above or turbine load reaches 70%, whichever occurs earlier.

#### D.2.17 40 CFR Part 60, Subpart GG Compliance Requirements (Stationary Gas Turbines)

Pursuant to 40 CFR Part 60, Subpart GG (Stationary Gas Turbines), the Permittee shall monitor the nitrogen and sulfur content of the natural gas on a monthly basis as follows:

- (a) Determine compliance with the nitrogen oxide and sulfur dioxide standards in 40 CFR 60.332 and 60.333(a), per requirements described in 40 CFR 60.335(c);
- (b) Determine the sulfur content of the natural gas being fired in the turbine by ASTM Methods D 1072-80, D 3030-81, D 4084-82, or D 3246-81. The applicable ranges of some ASTM methods mentioned are not adequate to measure the levels of sulfur in some fuel gases. Dilution of samples before analysis (with verification of the dilution ratio) may be used, subject to the approval of the Administrator; and

- (c) Determine the nitrogen content of the natural gas being fired in the turbine by using analytical methods and procedures that are accurate to within 5 percent and are approved by the Administrator.

The analyses required above may be performed by the owner or operator, a service contractor retained by the owner or operator, the fuel vendor or any other qualified agency.

Owners, operators or fuel vendors may develop custom fuel schedules for determination of the nitrogen and sulfur content based on the design and operation of the affected facility and the characteristics of the fuel supply. These schedules shall be substantiated with data and must be approved by the Administrator before they can be used to comply with the above requirements.

#### **D.2.18 Continuous Emission Monitoring System (CEMS)**

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- (a) The owner or operator of a new source with an emission limitation or permit requirement established under 326 IAC 2-5.1-3 and 326 IAC 2-2, shall be required to install a continuous emissions monitoring system or alternative monitoring plan as allowed under the Clean Air Act and 326 IAC 3-5-1(d).
- (b) The Permittee shall install, calibrate, certify, operate and maintain a continuous emission monitoring system for NO<sub>x</sub> and CO, for stacks designated as E11A, E12A, E21A and E22A in accordance with 326 IAC 3-5-2 and 3-5-3.
  - (1) The continuous emission monitoring system (CEMS) shall measure NO<sub>x</sub> and CO emissions rates in pounds per hour and parts per million (ppmvd) corrected to 15% O<sub>2</sub>. The use of CEMS to measure and record the NO<sub>x</sub> and CO hourly limits, is sufficient to demonstrate compliance with the limitations established in the BACT analysis and set forth in the permit. To demonstrate compliance with the NO<sub>x</sub> limit, the source shall take an average of the parts per million (ppmvd) corrected to 15% O<sub>2</sub> over a three (3) hour averaging period. To demonstrate compliance with the CO limit, the source shall take an average of the parts per million (ppmvd) corrected to 15% O<sub>2</sub> over a twenty four (24) hour averaging period. The source shall maintain records of the parts per million and the pounds per hour.
  - (2) The Permittee shall determine compliance with Condition D.2.5 utilizing data from the NO<sub>x</sub>, CO, and O<sub>2</sub> CEMS, the fuel flow meter, and Method 19 calculations.
  - (3) The Permittee shall submit to IDEM, OAQ, within ninety (90) days after monitor installation, a complete written continuous monitoring standard operating procedure (SOP), in accordance with the requirements of 326 IAC 3-5-4.
  - (4) The Permittee shall record the output of the system and shall perform the required record keeping, pursuant to 326 IAC 3-5-6, and reporting, pursuant to 326 IAC 3-5-7.
- (c) Pursuant to 40 CFR 60.47(d), the Permittee shall install, calibrate, certify and operate continuous emissions monitors for carbon dioxide or oxygen at each location where nitrogen oxide emissions are monitored.

#### **Record Keeping and Reporting Requirements [326 IAC 2-5.1-3(e)(2)] [326 IAC 2-6.1-5(a)(2)]**

#### **D.2.19 Record Keeping Requirements**

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- (a) To document compliance with Conditions D.2.2, D.2.5 through D.2.8, and D.2.11, the Permittee shall maintain records of the following:

- (1) Amount of natural gas combusted (in MMCF) per turbine during each month.
  - (2) Percent sulfur of the natural gas.
  - (3) Heat input on a lower heating value basis of each turbine on a 30-day rolling average.
- (b) To document compliance with Condition D.2.5, the Permittee shall maintain records of the following:
- (1) The type of operation (i.e. startup or shutdown) with supporting operational data
  - (2) The total number of minutes for startup or shutdown per 24-hour averaging period per turbine
  - (3) The CEMS data, fuel flow meter data, and Method 19 calculations corresponding to each startup and shutdown period.
- (c) To document compliance with Conditions D.2.6 and D.2.7, the Permittee shall maintain records of the emission rates of NO<sub>x</sub> and CO in pounds per hour and parts per million (ppmvd) corrected to 15% oxygen.
- (d) To document compliance with Condition D.2.18, the Permittee shall maintain records, including raw data of all monitoring data and supporting information, for a minimum of five (5) years from the date described in 326 IAC 3-5-7(a). The records shall include the information described in 326 IAC 3-5-7(b).
- (e) To document compliance with D.2.10, the Permittee shall maintain records of the natural gas analyses, including the sulfur and nitrogen content of the gas, for a period of three (3) years.
- (f) All records shall be maintained in accordance with Section C – General Record Keeping Requirements, of this permit.

#### D.2.20 Reporting Requirements

The Permittee shall submit the following information on a quarterly basis:

- (a) Records of excess NO<sub>x</sub> and CO emissions (defined in 326 IAC 3-5-7 and 40 CFR Part 60.7) from the continuous emissions monitoring system. These reports shall be submitted within thirty (30) calendar days following the end of each calendar quarter and in accordance with Section C – General Reporting Requirements of this permit.
- (b) The Permittee shall report periods of excess emissions, as required by 40 CFR 60.334(c)
- (c) A quarterly summary of the CEMs data to document compliance with D.2.6, and D.2.7 shall be submitted to the address listed in Section C – General Reporting Requirements, of this permit, within thirty (30) days after the end of the quarter being reported.
- (d) A quarterly summary of the total number of startup and shutdown hours of operation and corresponding startup and shutdown emissions to document compliance with Condition D.2.5, shall be submitted to the address listed in Section C – General Reporting Requirements, of this permit, within thirty (30) days after the end of the quarter being

reported.

### SECTION D.3 FACILITY CONDITIONS – Natural Gas Conditioning Heaters

**Facility Description [326 IAC 2-5.1-3]**

Five (5) natural gas conditioning heaters, designated NGCH1, NGCH2, NGCH3, NGCH4, NGCH5 with a maximum heat input capacity of 5 MMBtu/hr (per unit on a higher heating value basis), and exhausts to stacks E7, E8, E9, E10, E11 respectively.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

#### Emission Limitations and Standards

**D.3.1 Opacity Limitations**

Pursuant to 326 IAC 5-1-2, the Permittee shall not cause the average opacity of the gas heater stacks to exceed twenty percent (20%) in any one (1) six (6) minute period. The opacity standards apply at all times, except during periods of startup, shutdown, or malfunction.

**D.3.2 Best Available Control Technology for the Natural Gas Conditioning Heaters:**

Pursuant to 326 IAC 2-2 (PSD Requirement), the source shall comply with the following:

- (a) Use natural gas as the only fuel for the gas heaters.
- (b) Perform good combustion practices.
- (c) The combined natural gas usage from the five (5) natural gas conditioning heaters shall not exceed 144.8 MMSCF per year, based on a twelve (12) consecutive month period.

#### Record Keeping and Reporting Requirements [326 IAC 2-5.1-3(e)(2)] [326 IAC 2-6.1-5(a)(2)]

**D.3.3 Record Keeping Requirements**

- (a) To document compliance with Conditions D.3.2, the Permittee shall maintain records of the amount of natural gas combusted by the Natural Gas Conditioning Heaters during each month.
- (b) All records shall be maintained in accordance with Section C – General Record Keeping Requirements.

**D.3.4 Reporting Requirements**

The Permittee shall submit on a quarterly basis a summary of the information to document compliance with Condition D.3.2 to the addresses listed in Section C - General Reporting Requirements, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported.

## **SECTION D.4 FACILITY CONDITIONS – Backup Equipment**

- (a) Two (2) diesel fire pumps, with a rating of 267 horsepower (hp).
  - (b) Two (2) diesel emergency generators, with a rating of 1,475 horsepower (hp).
- (The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

### **Emission Limitations and Standards**

#### **D.4.1 BACT Limitation for Fire Pumps**

Pursuant to 326 IAC 2-2 (PSD Requirements) the two (2) diesel fire pumps shall comply with the following:

- (a) The total input of the fire pumps shall be limited to 6,569 gallons per twelve (12) consecutive month period, rolled on a monthly basis.
- (b) The sulfur content of the diesel fuel used by the fire pump shall not exceed 0.05 percent by weight.
- (c) Perform good combustion practice.

#### **D.4.2 BACT Limitation for Emergency Generators**

Pursuant to 326 IAC 2-2 (PSD Requirements) the two (2) emergency generators shall comply with the following:

- (a) The total input of the fire pumps shall be limited to 37,847 gallons per twelve (12) consecutive month period, rolled on a monthly basis.
- (b) The sulfur content of the diesel fuel used by the fire pump shall not exceed 0.05 percent by weight.
- (c) Perform good combustion practice.

### **Compliance Determination Requirements**

#### **D.4.3 Performance Testing**

The Permittee is not required to test these emissions units by this permit. However, IDEM may require compliance testing when necessary to determine if the emissions unit is in compliance. If testing is required by IDEM or VCAPC, compliance shall be determined by a performance test conducted in accordance with Section C - Performance Testing.

### **Record Keeping and Reporting Requirements [326 IAC 2-5.1-3(e)(2)] [ 326 IAC 2-6.1-5(a)(2)]**

#### **D.4.4 Record Keeping Requirements**

To document compliance with Conditions D.4.1 and D.4.2, the Permittee shall maintain records of the following:

- (1) Amount of diesel fuel combusted each month in the two (2) fire pumps.

- (2) Amount of diesel fuel combusted each month in the two (2) emergency generators.
- (3) The percent sulfur content of the diesel fuel.

#### D.4.5 Reporting Requirements

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A quarterly summary of the information to document compliance with D.4.1 and D.4.2 shall be submitted to the address listed in Section C – General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported.

## MALFUNCTION REPORT

### INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT OFFICE OF AIR QUALITY FAX NUMBER - 317 233-5967

**This form should only be used to report malfunctions applicable to Rule 326 IAC 1-6  
and to qualify for the exemption under 326 IAC 1-6-4.**

THIS FACILITY MEETS THE APPLICABILITY REQUIREMENTS BECAUSE IT HAS POTENTIAL TO EMIT 25 LBS/HR PARTICULATE MATTER ?\_\_\_\_\_, 100 LBS/HR VOC ?\_\_\_\_\_, 100 LBS/HR SULFUR DIOXIDE ?\_\_\_\_\_, OR 2000 LBS/HR OF ANY OTHER POLLUTANT ?\_\_\_\_\_. EMISSIONS FROM MALFUNCTIONING CONTROL EQUIPMENT OR PROCESS EQUIPMENT CAUSED EMISSIONS IN EXCESS OF APPLICABLE LIMITATION \_\_\_\_\_.

THIS MALFUNCTION RESULTED IN A VIOLATION OF: 326 IAC \_\_\_\_\_ OR, PERMIT CONDITION # \_\_\_\_\_ AND/OR PERMIT LIMIT OF \_\_\_\_\_

THIS INCIDENT MEETS THE DEFINITION OF 'MALFUNCTION' AS LISTED ON REVERSE SIDE ?    Y        N

THIS MALFUNCTION IS OR WILL BE LONGER THAN THE ONE (1) HOUR REPORTING REQUIREMENT ?    Y        N

COMPANY: \_\_\_\_\_ PHONE NO. ( \_\_\_\_\_ ) \_\_\_\_\_

LOCATION: (CITY AND COUNTY) \_\_\_\_\_

PERMIT NO. \_\_\_\_\_ AFS PLANT ID: \_\_\_\_\_ AFS POINT ID: \_\_\_\_\_ INSP: \_\_\_\_\_  
CONTROL/PROCESS DEVICE WHICH MALFUNCTIONED AND REASON: \_\_\_\_\_

DATE/TIME MALFUNCTION STARTED: \_\_\_\_/\_\_\_\_/20\_\_\_\_        AM / PM

ESTIMATED HOURS OF OPERATION WITH MALFUNCTION CONDITION: \_\_\_\_\_

DATE/TIME CONTROL EQUIPMENT BACK-IN SERVICE \_\_\_\_/\_\_\_\_/20\_\_\_\_        AM/PM

TYPE OF POLLUTANTS EMITTED: TSP, PM-10, SO<sub>2</sub>, VOC, OTHER: \_\_\_\_\_

ESTIMATED AMOUNT OF POLLUTANT EMITTED DURING MALFUNCTION: \_\_\_\_\_

MEASURES TAKEN TO MINIMIZE EMISSIONS: \_\_\_\_\_

REASONS WHY FACILITY CANNOT BE SHUTDOWN DURING REPAIRS:

CONTINUED OPERATION REQUIRED TO PROVIDE ESSENTIAL\* SERVICES: \_\_\_\_\_

CONTINUED OPERATION NECESSARY TO PREVENT INJURY TO PERSONS: \_\_\_\_\_

CONTINUED OPERATION NECESSARY TO PREVENT SEVERE DAMAGE TO EQUIPMENT: \_\_\_\_\_

INTERIM CONTROL MEASURES: (IF APPLICABLE) \_\_\_\_\_



MALFUNCTION REPORTED BY: \_\_\_\_\_ TITLE: \_\_\_\_\_  
(SIGNATURE IF FAXED)

MALFUNCTION RECORDED BY: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

**Please note - This form should only be used to report malfunctions  
applicable to Rule 326 IAC 1-6 and to qualify for  
the exemption under 326 IAC 1-6-4.**

PAGE 1 OF 2

### **326 IAC 1-6-1 Applicability of rule**

Sec. 1. This rule applies to the owner or operator of any facility required to obtain a permit under 326 IAC 2-5.1 or 326 IAC 2-6.1.

### **326 IAC 1-2-39 "Malfunction" definition**

Sec. 39. Any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner.

**\*Essential services** are interpreted to mean those operations, such as, the providing of electricity by power plants. Continued operation solely for the economic benefit of the owner or operator shall not be sufficient reason why a facility cannot be shutdown during a control equipment shutdown.

If this item is checked on the front, please explain rationale:

\_\_\_\_\_  
\_\_\_\_\_

**Indiana Department of Environmental Management  
Office of Air Quality  
Compliance Data Section and Vigo County Air Pollution Control**

**Quarterly Report**

Company Name: Mirant Sugar Creek LLC  
Location: 5900 Darwin Road, West Terre Haute, IN 47885  
Permit No.: CP-167-15295-00123  
Source: Natural Gas Conditioning Heaters (five (5) units)  
Limit: 144.8 MMCF per twelve (12) consecutive month period

**Year:** \_\_\_\_\_

Month	Column 1	Column 2	Column 1 + 2
	This Month	Previous 11 months	12 Month Total

? No deviation occurred in this quarter.

? Deviation/s occurred in this quarter.  
Deviation has been reported on:

Submitted by: \_\_\_\_\_  
Title / Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

**Indiana Department of Environmental Management  
Office of Air Quality  
Compliance Data Section and Vigo County Air Pollution Control**

**Quarterly Report**

Company Name: Mirant Sugar Creek LLC  
Location: 5900 Darwin Road, West Terre Haute, IN 47885  
Permit No.: CP-167-12208-00123  
Source: Two (2) emergency diesel fire pump  
Limit: 6,569 gallons per twelve (12) consecutive month period

**Year:** \_\_\_\_\_

Month	Diesel Fuel Oil Usage (gallons/month)	Diesel Fuel Oil Usage for previous month(s) (gallons)	Diesel Fuel Oil Usage for twelve month period (gallons)

? No deviation occurred in this quarter.

? Deviation/s occurred in this quarter.  
Deviation has been reported on:

Submitted by: \_\_\_\_\_  
Title / Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

**Indiana Department of Environmental Management  
Office of Air Quality  
Compliance Data Section and Vigo County Air Pollution Control**

**Quarterly Report**

Company Name: Mirant Sugar Creek LLC  
Location: 5900 Darwin Road, West Terre Haute, IN 47885  
Permit No.: CP-167-12208-00123  
Source: Two (2) emergency generators  
Limit: 37,847 gallons per twelve (12) consecutive month period

**Year:** \_\_\_\_\_

Month	Diesel Fuel Oil Usage (gallons/month)	Diesel Fuel Oil Usage for previous month(s) (gallons)	Diesel Fuel Oil Usage for twelve month period (gallons)

? No deviation occurred in this quarter.

? Deviation/s occurred in this quarter.  
Deviation has been reported on:

Submitted by: \_\_\_\_\_  
Title / Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

**Indiana Department of Environmental Management  
Office of Air Quality  
Compliance Data Section and Vigo County Air Pollution Control**

**Quarterly Report**

Company Name: Mirant Sugar Creek LLC  
Location: 5900 Darwin Road, West Terre Haute, IN 47885  
Permit No.: CP-167-12208-00123  
Source: Four (4) natural gas combustion turbines operating in simple cycle  
Limit: Two (2) hours per startup, and 250 hours per year for startups. Two (2) hours per shutdown, and 42 hours per year for shutdowns.

Month: \_\_\_\_\_ Year: \_\_\_\_\_

Total hours from previous month(s) \_\_\_\_\_ startup \_\_\_\_\_ shutdown \_\_\_\_\_

\_\_\_\_\_ Total hours per year for startup and shutdown for 12 month period \_\_\_\_\_

Day/ Turbine	Startup				Shutdown				Day/ Turbine	Startup				Shutdown			
	1	2	3	4	1	2	3	4		1	2	3	4	1	2	3	4
1									17								
2									18								
3									19								
4									20								
5									21								
6									22								
7									23								
8									24								
9									25								
10									26								
11									27								
12									28								
13									29								
14									30								
15									31								
16									Total								

\_\_\_\_\_ No deviation occurred in this month

\_\_\_\_\_ Deviation/s occurred in this month.  
Deviation has been reported on:

Submitted by: \_\_\_\_\_  
Title/Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

**Indiana Department of Environmental Management  
Office of Air Quality, Compliance Data Section  
and Vigo County Air Pollution Control**

**Quarterly Report**

Company Name: Mirant Sugar Creek LLC  
Location: 5900 Darwin Road, West Terre Haute, IN 47885  
Permit No.: CP-167-12208-00123 and 167-18343-00123  
Source: Four (4) natural gas combustion turbines operating in combined cycle, please copy and use separate form for each turbine  
Limit: 6.5 hours per event  
(an event consists of one startup and one shutdown). The time period on annual basis for events not to exceed 1,000 hours per 12 consecutive month period in startups and shutdown mode with compliance demonstrated at the end of each month.

Year: \_\_\_\_\_ Quarter: \_\_\_\_\_ Turbine ID: \_\_\_\_\_

Month	Column 1	Column 2	Column 1 + Column 2
	hours during events this month	hours during events during previous 11 months	hours during events for twelve month period
	Hours	Hours	Hours

? No deviation occurred in this month      ? Deviation/s occurred in this month.  
Deviation has been reported on:

Submitted by: \_\_\_\_\_

Title/Position: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Telephone: \_\_\_\_\_

**Indiana Department of Environmental Management  
Office of Air Quality  
and Vigo County Air Pollution Control**

Technical Support Document (TSD) for a Significant Modification to a Construction and  
Prevention of Significant Deterioration (PSD) Permit

**Source Background and Description**

Source Name:	Mirant Sugar Creek, LLC
Source Location:	5900 Darwin Road, West Terre Haute, IN 47885
County:	Vigo
SIC Code:	4911
Permit No.:	PSD 167-12208-00123
Permit Issuance Date:	May 09, 2001
Significant Modification No.:	167-18343-00123
Permit Writer:	Iryn Calilung
Air Quality Impact Modeler:	Krista Gremos

On November 14, 2003, the Indiana Department of Environmental Management (IDEM) received an application from Mirant Sugar Creek, LLC (Mirant) to modify its existing carbon monoxide (CO) emission limitations during start up (SU) and shutdown (SD) periods of the permitted combined cycle combustion turbines (CCCTs). Detailed evaluations of the modifications are explained in the subsequent pages of this document.

**Combined Cycle Combustion Turbines (CCCT) - - CO**

Table 1, shown below, summarizes the CO historical limits for each CCCT in the plant:

<b>Table 1 CO Start up (SU) and Shutdown (SD) Limitations For Each Combined Cycle Combustion Turbine (CCCT)</b>			
	PSD 167-12208-00123 May 09, 2001	PSD 167-17717-00123 April 23, 2003	Proposed Revisions (167-18343-00123)
SU/SD (hours per year)	500 hours/year for SU and 83 hours/year for SD	583 hours/year	1,000 hours/year
CO SU/SD total emissions	82.5 tons/year	82.5 tons/year	312 tons/year
CO BACT limits	150 ppm for SU and 90 ppm for SD	2,446 lbs/event	7,911 lbs/event
There are a total of 4 combined cycle turbines in this plant.			
Pursuant to PSD 167-17717-00123, an event was defined as exactly one (1) startup and exactly one (1) shutdown and shall not exceed six and five-tenth (6.5) hours.			

(1) Initial PSD CO SU/SD Limits

The CO SU/SD emissions limits for each CCCT specified in the initial PSD permit are summarized in the second column of Table 1. These limits were based on the assumptions that each CCCT would experience 250 SU/SD events per year, each SU period lasts 2 hours and each SD period lasts 20 minutes.

(2) First CO SU/SD PSD Limits Revisions

The initial revisions of the CO SU/SD limits made in April, 2003 were based on experiences at that time with this type of operation (CCCT). It was determined that the SU/SD limits were more appropriately expressed in terms of pounds per event. In the case of Mirant, an event was defined as exactly 1 startup and exactly 1 shutdown and not exceeding 6.5 hours. The CO SU/SD emissions limits were based on actual operational data of similar turbines. The initial revisions changed the CO short-term limit (from ppm to lbs/event), but maintained the total tons per year CO SU/SD emissions. The revisions also provided an operational flexibility by eliminating the specific hours of operation for each SU and SD period.

The revisions of the CO SU/SD limits were reviewed under 326 IAC 2-2 PSD requirements.

(3) Proposed CO SU/SD Limits

On June 24, 2003, Mirant began commercial operations of 2 out of 4 CCCTs. Based on the daily operation of these 2 CCCTs, Mirant has exceeded the CO SU/SD mass limits (lbs/event) 16 times out of the 38 SU/SD events. After performing investigative efforts:

- - verification of the accuracy of the CO continuous emissions monitoring system (CEMS),
- - consultation with the turbines manufacturer (GE), and
- - evaluation of the different operating profiles of similar turbines/operations (another merchant plant located in Michigan and owned by Mirant). It has to be noted that the plant in Michigan does not have SU/SD limits specified.

Mirant concluded that the existing CO SU/SD limits could not be complied with on a consistent basis.

### **Justification for Modification**

The construction permits 167-12208-00123 and 167-17717-00123 are being modified under the provisions of 326 IAC 2-2 and IC 13-15-7-1 because the startup/shutdown limitations established in the PSD permit are being revised through this approval. Therefore, this modification will be subject to the requirements of public notice and will have 30-day public comment period.

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

Applications for the purposes of this review were received on November 14, 2003.

Subsequent pages show the evaluations of the requested revisions. The initial estimate that each CCCT was expected to experience 250 SU/SD events per year was the consistent factor affecting the evaluation. The review was concentrated on the data of the actual operation of the CCCTs from June 24, 2003 to August 29, 2003.



Mirant Sugar Creek LLC  
West Terre Haute, Indiana  
Permit Writer: Iryn Calilung

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TSD of PSD Significant Modification 167-18343-00123

**Revision No. 1 - - -** Increase the limitation of annual hours of operations for each CCCT from 583 hours/year to 1,000 hours/year.

<b>Table 2 SU/SD Limitations For Each CCCT</b>		
	PSD 167-17717-00123 April 23, 2003	Proposed Revisions (167-18343-00123)
SU/SD (hours per year)	583 hours/year	1,000 hours/year

- (a) CO SU/SD events = 583 hours/year  
The 583 hours/year limitation was based on the assumption that each CCCT would experience 250 SU/SD per year. This was also based on the assumption that each SU period lasts 2 hours and each SD period lasts 20 minutes (see below calculations).

$$\text{Annual Hours of SU/SD} = \frac{250 \text{ SU}}{\text{year}} * \frac{2 \text{ hours}}{\text{SU}} + \frac{250 \text{ SD}}{\text{year}} * \frac{20 \text{ min}}{\text{SD}} * \frac{1 \text{ hour}}{60 \text{ mins}}$$

$$\text{Annual Hours of SU/SD} = \frac{500 \text{ hours SU}}{\text{year}} + \frac{83 \text{ hours SD}}{\text{year}}$$

$$\text{Annual Hours of SU/SD} = \frac{583 \text{ hours}}{\text{year}}$$

However, based on the actual operations of the 2 CCCTs that have been in commercial operations, the SU and SD periods took substantially longer periods than 2 hours and 20 minutes, respectively.

- (b) CO SU/SD events = 1,000 hours/year  
An SU/SD event is allowed up to 6.5 hours/event. The 38 actual SU/SD periods ranged from 2.53 hours to 8.65 hours per event. The longest SU/SD event was, however, due to a malfunction, thus it was not considered in the re-evaluations of the limits. The actual SU/SD events averaged 3.58 hours per event.

Based on the evaluation of the SU/SD actual data, 4 hours per SU/SD event is a realistic assumption. Maintaining the initial assumption of 250 SU/SD per year and using the revised 4 hours/event limit would result to 1,000 hours/year (see below calculations).

$$\text{Annual Hours of SU/SD} = \frac{250 \text{ SU/SD}}{\text{year}} * \frac{4 \text{ hours}}{\text{SU/SD}}$$

$$\text{Annual Hours of SU/SD} = \frac{1,000 \text{ hours}}{\text{year}}$$

- (c) CO SU/SD event = 6.5 hours/event  
The proposed revised limit is still lower than the maximum hours of SU/SD events per year if it is assumed that each event lasts 6.5 hours.

$$\text{Annual Hours of SU/SD} = \frac{250 \text{ SU/SD}}{\text{year}} * \frac{6.5 \text{ hours}}{\text{SU/SD}}$$

Annual Hours of SU/SD = 1,625 hours  
year

**Revision No. 2 - - -** Increase the limitation of the annual CO SU/SD emitted from each CCCT from 82.5 tons/year to 312.5 tons/year.

<b>Table 3 CO SU/SD Limitations For Each CCCT</b>		
	PSD 167-17717-00123 April 23, 2003	Proposed Revisions (167-18343-00123)
CO SU/SD total emissions	82.5 tons/year	312 tons/year

- (a) CO SU/SD = 82.5 tons/year  
The 82.5 tons/year CO SU/SD limitation was based on the assumption that each CCT would experience 500 hours of SU per year at 300 lbs/hour and 83 hours of SD per year at 180 lbs/hour (see calculations below).

$$\text{CO SU/SD} = \frac{500 \text{ hours SU}}{\text{year}} * \frac{300 \text{ lbs}}{\text{hour}} + \frac{83 \text{ hours SD}}{\text{year}} * \frac{180 \text{ lbs}}{\text{hour}}$$

$$\text{CO SU/SD} = \frac{164,940 \text{ lbs}}{\text{year}}$$

$$\text{CO SU/SD} = \frac{82.5 \text{ tons}}{\text{year}}$$

- (b) CO SU/SD = 312.5 tons/year  
Again, actual data showed that CO emissions during start ups and shutdowns are significantly higher than these initial assumptions.

The CO SU/SD emissions actually emitted ranged from 1,342 lbs/event to 4,979 lbs/event. The actual 38 SU/SD events resulted in an average of 2,488 pounds of CO per event.

Maintaining the initial assumption of 250 SU/SD per year and using the revised 2,500 pounds of CO per event would result in 312.5 tons/year.

$$\text{CO SU/SD} = \frac{250 \text{ events}}{\text{year}} * \frac{2,500 \text{ lbs}}{\text{event}}$$

$$\text{CO SU/SD} = \frac{525,000 \text{ lbs}}{\text{year}}$$

$$\text{CO SU/SD} = \frac{312.5 \text{ tons}}{\text{year}}$$

**Revision No. 3** - - - Increase the CO SU/SD emissions short term limit for each CCCT from 2,446 lbs/event to 7,911 lbs/event.

<b>Table 4 CO SU/SD Limitations For Each CCCT</b>		
	PSD 167-17717-00123 April 23, 2003	Proposed Revisions (167-18343-00123)
CO BACT limits	2,446 lbs/event	7,911lbs/event

- (a) CO SU/SD = 2,446 lbs/event  
The 2,446 lbs/event limit is the equivalent mass limit of the original CO emission limits - - -  
- during the startups (150 ppmvd corrected to 15% O<sub>2</sub>), and  
- during shutdown (90 ppmvd corrected to 15% O<sub>2</sub>).

Based on the actual 38 SU/SD events and the data from the manufacturer of the turbines, the CO SU/SD per event mass limit should also be adjusted.

- (b) CO SU/SD = 7,911 lbs/event  
The highest CO SU/SD emissions actually emitted and still within the allowed time frame of 6.5 hours/event were 5,089 lbs/event. This is equivalent to 1,131 pounds of CO per hour.

Mirant proposed to revise the CO limit to 7,911 lbs/event. This new limit is equivalent to 1,217 pounds of CO per hour.

An air quality analysis has been performed to determine the impact due to this revised mass emission. Mirant submitted a CO air quality analysis. Additional area sources for CO were included in this modeling and the results were compared to the National Ambient Air Quality Standards (NAAQS). The dispersion model was based on the assumption that all 4 CCTs are emitting 5,000 pounds of CO per hour, which is higher than the 1,217 pounds of CO per hour rate which was the basis the new limit of 7,911 pounds of CO per event. Results of this modeling are shown in the table below.

IDEM verified the results of the air quality analysis. The impact is predicted to be acceptable and under the CO 1-hour and 8-hour averages of the National Ambient Air Quality Standard (NAAQS). The results of the emission start-up analysis show no violation of the short-term averaging periods for CO.

<b>TABLE 5 National Ambient Air Quality Standards Analysis (ug/m3)</b>						
Pollutant	Year	Time-Averaging Period	Modeled Source Impacts	Background*	Total	NAAQS Limits
CO	1992	Highest 2 <sup>nd</sup> , high 1-hour	7,594	6,298	13,892	40,000
	1992	Highest 2 <sup>nd</sup> , high 8-hour	4,394	3,893	8,287	10,000

\* Background numbers are from the Evansville site (18-163-0012).

Mirant Sugar Creek LLC  
West Terre Haute, Indiana  
Permit Writer: Iryn Calilung

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## Similar CCCTs in Indiana

Table 6, shown below, summarizes the CO SU/SD limits of similar operations permitted in Indiana.

<b>Table 6 CO SU/SD Limits of Similar CCCTs in Indiana</b>					
Source Name	CCCTs (MMBTU/hour)	SU/SD (hours/event)	SU/SD (hours/year)	CO (lbs/event)	CO (tons/year)
Allegheny Energy St. Joseph County	2,071	4.16	585	3,935	--
Cogentrix Lawrence County	1,944.1	6.17	--	1,509	--
Duke Energy Vigo County	1,984	8	--	1,739.7	168.7
Mirant Sugar Creek Vigo County	1,490.5	6.5	583	2,446	82.5
	(existing)				
	<b>(proposed)</b>				
PSEG Dearborn County	1,906.4	7	2,240	--	--
Tenaska Pike County	2,112	5.6	650	13,558	--

- (1) -- means there are no limits specified in the permit.
- (2) The limits are expressed for each CCCT of the merchant plant.
- (3) No actual operating data can be used for comparison for the following plants because these plants have not been constructed:
  - (a) Allegheny Energy, St. Joseph County, permitted in December, 2001.
  - (b) Cogentrix, Lawrence County, permitted in October, 2001.
  - (c) Duke Energy, Vigo County, permitted in June, 2001.
  - (d) Tenaska, Pike County, permitted in November, 2002.
- (4) PSEG, Dearborn County  
On December 23, 2002, PSEG was issued a PSD modification approval, which revised the annual hours of SU/SD events from 560 hours/year to 2,240 hours/year. In addition, PSEG was approved to evaluate the actual data gathered during its first 36 months of operation and then establish the short term (CO lbs/event SU/SD) limit based on the operating parameters during this period.

PSEG finished its construction of the turbines in October, 2003. Performance testing is scheduled to be performed before the end of the year 2003. No actual data can be used for comparison because the plant has not sufficiently operated for commercial production.

- (5) The proposed revised limits for Mirant are comparable to the existing limits of the other constructed CCCT merchant plant (PSEG) in Indiana.

<b>Table 7 CO SU/SD Limits of Similar CCCTs in Operation</b>					
Source Name	CCCTs (MMBTU/hour)	SU/SD (hours/event)	SU/SD (hours/year)	CO (lbs/event)	CO (tons/year)
Mirant Sugar Creek Vigo County	1,490.5	6.5	1,000	7,911	312.5
PSEG Dearborn County	1,906.4	7	2,240	--	--

### Proposed Permit Revisions

Due to the above mentioned proposed revisions to the CO SU/SD emissions limitations, the following changes are made to the permit (changes are shown in **bold** font and ~~strikeout~~ fonts to show the differences):

#### D.2.5 Startup and Shutdown Limitations for Combustion Turbines

Pursuant to 326 IAC 2-2 (PSD Requirements), following applies to each combustion turbine:

- (a) A startup is defined as the operation in the period of time from the initiation of combustion until the turbine reaches a minimum load of seventy (70) percent or instantaneous outlet SCR NO<sub>x</sub> concentration reaches level less than 3.0 ppm at 15% O<sub>2</sub> whichever occurs earlier.
- (b) A shutdown is defined as operation at less than fifty (50) percent load descending to flame out.
- (c) An event is defined as exactly one (1) startup and exactly one (1) shutdown and shall not exceed six and five-tenth (6.5) hours.
- (d) Each turbine shall not exceed ~~583~~ **1,000** hours in 12 consecutive month period in startup and shutdown mode with compliance demonstrated at the end of each month.
- (e) The NO<sub>x</sub> emissions from each combustion turbine stack shall not exceed 64.9 tons in 12 consecutive month period for startup and shutdown duration with compliance demonstrated at the end of each month. Each combustion turbine shall not exceed 997 pounds of NO<sub>x</sub> emissions per event.
- (f) The CO emissions from each combustion turbine stack shall not exceed ~~82.5~~ **312.5** tons in 12 consecutive month period for startup and shutdown duration with compliance demonstrated at the end of each month. Each combustion turbine shall not exceed ~~2446~~ **7,911** pounds of CO emissions per event.

Corresponding Quarterly Reports were revised due to these changes.



Mirant Sugar Creek LLC  
West Terre Haute, Indiana  
Permit Writer: Iryn Calilung

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TSD of PSD Significant Modification 167-18343-00123

### Permitting History and Source Status

- (1) The source was issued a PSD Construction Permit 167-12208-00123 on May 09, 2001. The source has since received the following approvals:
  - (a) First Significant Modification No.: 167-15295-00123, issued on July 24, 2002;
  - (b) First Notice Only Change No.: 167-15906-00123, issued on August 06, 2002;
  - (c) Review Request No.: 167-16467-00123, issued on August 26, 2002; and
  - (d) Second Significant Modification No.: 167-17717-00123, issued on April 23, 2003.The permit revised by this review has all the previous changes made by these approvals.
- (2) This existing source is a major stationary source because an attainment regulated pollutant is emitted at a rate of 100 tons per year or more, and it is one of the 28 listed source categories.
- (3) Mirant submitted a Part 70 permit application on March 11, 2003.

### Emission Calculations

There are no new emission units being constructed or existing units being modified. Also the allowable emissions remain unchanged from the original permit. Therefore no emission calculations are required for this change.

### County Attainment Status

The source is located in Vigo County. There is no change in the status of this county from the initial PSD review.

Table 8 County Status	
Pollutant	Status
PM <sub>10</sub>	Attainment
SO <sub>2</sub>	Attainment
NO <sub>2</sub>	Attainment
Ozone	Attainment
CO	Attainment
Lead	Attainment

- (a) Volatile organic compounds (VOC) are precursors for the formation of ozone. Therefore, VOC emissions are considered when evaluating the rule applicability relating to the ozone standards. Vigo County has been designated as attainment or unclassifiable for ozone. Therefore, VOC emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

- (b) Vigo County has been classified as attainment or unclassifiable for PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>2</sub>, Lead and CO. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

### **Federal and State Rule Applicability**

There are no new rules applicable to this Source because of these changes in the permit.

### **Recommendation**

The staff recommends to the Commissioner that the PSD Significant Modification be provided to the public for comment.

Other existing limits are not being revised and are not part of this modification.

### **Conclusion**

The proposed modification shall be subject to the conditions of the attached proposed PSD Significant Modification 167-18343-00123.